

NEWS IN BRIEF

No action on

allegedly had a trip to South preferable for arrangements for such a visit, which involved promotion of British computer technology, to have been made with the City Council."

The two men also asked that they should cease to have responsibility for the council's computer installation "to avoid any possible criticism in the fu-

Honeywell hit

DAMAGE estimated at between £500,000 and £1 million was caused to the Honeywell stores and warehousing centre at Segrate, near Milan over the weekend. The stores belong to Honeywell Spa, the controls division of the company, and the attack was part of a wave of bombing and arson which hit several Italian cities last week, following the discovery in Rome of the body of the murdered former premier, Aldo Moro.

Switching software

SOFTWARE has been intro-duced in the US by AT&T which allows the telephone company's Dimension private branch exchange to support the use of tie-lines between branch offices of a company. The software is called ETS for Electronic Tandem Switching, and was deve-loped to bent off competition from private suppliers of tandem switching equipment.

Computer Marketing

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Formula III sponsorship

or Niki Lauda is Rob Wilson, James Hunt or Niki Lauda is Rob Yvison, driver of the Formula III racing car sponsored jointly by Royal Grafton China and IC L.

The 26-year-old New Zealander, pictured right, is currently lying sixth in the BP Formula III championship and hopes to do well consider to more up to Formula III chart year.

mough to move up to Formula II next year. Motor racing fane can see Wilson in action at Outton Park, Cheshire, next Saturdey, May 20; at Thruxton, Hompshire, on Monday, May 29, the Spring Bank Holiday; and at Brands Hatch on Sunday, June 11.

Wilson hopes to do a lot better at these cvents than he did at Monaco the weekend before last, where he folled to qualify for the Formula III race because his gears jammed during the practice round on the gearbox-hammering Monaco circuit.

Between races Wilson takes the car to ICL

factories around the country. He says "This gives ICL employees a chance to look at their car and to talk to me and my mechanic about the sport. They are extremely enthusiastic. I also write a regular column in ICL News giving a report on how things are going."

Councillors' trip NO actron is to be taken against two Leeds City connecillors who allowed to had a felicity fourth. ICL invests £180,000 Africa fast month paid for by ICL (CW, May 11). Following a meeting last week at which the two men ware interviewed a

council statement commented:
"With hindsight, all parties

A MAJOR commitment to non-White computer training has been made by ICL in South Africa. The local subsidiary is investing R300,000 (£180,000) in the training of Blacks, Coloured and Asians this year, and the first group completes the course at the

From 1,200 applicants, 40 were chosen for training and were and worked harmoniously streamed into two groups.

"They all had either highgrade matriculation passes or were university graduates," John Starkey, ICL South Africa managing director, told Computer Weekly. "and one is a medical doctor.

"Questions have been raised about the programme, because other computer companies have tried the same thing and falled. mainly because of poor selection at the start. But out of the 40, we know now that we will end up with 26 first-class trained people, mainly Cobol programmers, and there will be another 10 or so qualified people from the second stream, which finishes at the end of June.

One of the students has asked about the possibility of employment with ICL in Nigeria, and while the primary aim is to meet the shortage of trained people in South Africa there will be opportunities for foreign postings within ICL.

After the initial training period, during which Cobol programming, report writing and business training are included in the curriculum, it is planned that the trainees will have a spell in the field either with ICL or with customers, after which they will return for further education.

ICL South Africa is one of the "We have people from seven different non-white ethnic groups on the courses, and one 2900s. Some 30 have been sold so company's largest overseas subof the pleasures has been to see the way people from different 2980s and 2970s.

sub-titles for the deaf system

A SYSTEM to provide sub-titles for all television programmes for the benefit of deaf people is being developed at Leicester Polytechnic. Using the BBC's Ceefax service, shorthand key-boards, and a Burroughs 6700 computer, stenographers could provide a continuous stream of sub-titles to be superimposed on

the normal television picture. Ceefax - and ITV's Oracle transmits textual information on unused lines at the top of the television picture, which can be decoded by special electronics in the receiving set and displayed as pages of characters in place of

Ceefax already has a sub-title

important new tool in econometric research, because

of the highly complex calcula-

tions that are often involved,

Poly man wins SSRC fellowship A FELLOWSHIP lasting two

years has been granted by the Social Sciences Research Council to Richard Bland, of Hatfield Polytechnic, to study the deve-lopment of computing in the social sciences. The SSRC has also decided to support the Distributed Array Processor at

Queen Mary College (CW. April 13) to the tune of £180,000, and is developing a self-contained mini-based statistical package for the use of universities.

The fellowship will involve a both to its capital and running survey of the whole computing scene as it affects research in the social sciences, particularly in survey analysis, econometrics, and geography. New develop-ments in hardware and software will be looked at, and recomiendations on improving social cience computing will probably

that could make a low-cost, de-The SSRC sees the DAP as an versities and polytechnics. dicated statistical tool for uni-Burroughs terminals range

THE new range of modular banking terminals from Burroughs, revealed exclusively (CW. November 11, 1977), has now been announced, items from the line are included in the 510 million of terminals on order for the

line are included in the £10 millon of terminals on order for the Altrincham Group of Trustee Savings Banks (CW, April 27).

The new building blocks for the banking market include keyboard display units, printers and microprocessor-based concentrators, and represent a research of the BP Forties oilfield in 1975, is to be upgraded in a £100,000 order received by the company. centrators, and represent a resourced requived by the company.

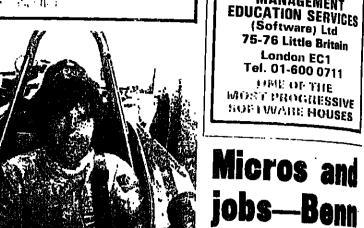


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ists who would listen to the

television sound as it goes out

and record it in Palantype

shorthand keyboards, such as

These are special keyboards

that are an alternative to

manual shorthand. The typist

records the speech in a special abbreviated phonetic code.

The translation is normally done manually, but to make

captions in real time, a computer

system is being devised at Leic-

ester to do the conversion by a

process of dictionary look-up.

and send the resultant English

text to the Ceefax encoder to be

Sherman, research director of ASTMS, that there could be five million unemployed by the end of the decade, much of it caused facility; this is one of the purby the development of informaposes for which Ceefax was originally invented. The problem tion technology, is likely to have a major influence on the attitude that the researchers at Leicester of the Labour movement are tackling is how to generate the text of the sub-titles. towards new technologies.

wants

Sherman's forecast is part of ! Preparing sub-titles from his input to the TUC study or scripts, as is done with foreign the shape of the quality of life is the future, which is due to be consuming and expensive, so the proosal is to use trained typready for the annual congress later this year.

Racal adds high are used by court stenographers. Speed modems

A NEW family of high speed voice band modems operating # 1 up to 9600 bps has been announced by Rucal-Milgo.

Based on microprocessors, the new family consists of four models, the 9629, 9601, 4829 and 4801. They offer a range of op-tions including test and disgnostic facilities and the Fastran rapid synchronisation feature for multi-drop networks. Also available is the Dynaport device.



change in Creat Brown by Q.B. Limited, Sheepen Place of denoting COS (114) and hubblehed by 190 Rhytrical Electronic Press Ltd. (124) House, Salimited Sifery, Limited, S.F. 1910.

UNDEO COMPUTER SYSTEMS bladwa

for terminals 01-952 8471

with Computer Weekly, are

running an Othello board game

competition in London on July 7

at Zeux-Hermes headquarters,

Shronshire House, 2/10 Capper

Street, London WC1, starting at

FLOPPY DISC . PRINTERS PLOTTERS

Briefing The Othello challenge discussion

COMPUTER &

MANAGEMENT

ENERGY Minister Tony Benn has called for a copy of the Earth Resources paper on the effect of microprocessors on employment (CW, May 11), so that it can be discussed at next month; meeting of the Home Policy Committee of the Labour Party National Executive. Benn's

Places for the competition are chairman of the committee. strictly limited and are by invitation only, with priority given And a prediction by Bards to players who represent their DP unit. Applications for entry will be considered only on an official entry form, which contains full rules and details. Players, who can bring one guest, will be selected on the basis of completed applications.

So hurry to get your form from Maureen Chapman, at the Zeus-Hermes address above or telephone 01-323 0637.

Level 6 expanded

TWO models have been added to Honeywell's Level 6 minicomputer range. Due to be announced today (Thursday), they are expected to bracket the existing machines in the line. Honeywell has also formally announced the CP-6 operating system which is designed to enable users of the Xerox CP-V operating system on Sigma machines to migrate to Level 66.

IBM X25 interface AN INTERFACE and a software

package which allows the Series minicomputer to connect to X25 packet-switched networks has been announced by IBM. It is available on a request price quotation basis only, and is at present limited to Canada and France where X25 networks are being built. It will allow exchange of data with any other network user who can handle HDLC dat frames.

DAP for atom men? is likely to be "absolutely phe-

THE UK Atomic Energy Authority are likely to obtain the ICL Distributed Array Processor within a few years to join a 64 million 2980 at Risley, which was officially inaugurated last week. The DAP could provide additional power to the 2980 to run its workload as well as being used for special applications. See page 5 The Risley 2980.

Cut night work, call

A MOTION for the abolition of at a time when there was also a creased use of computers in European parliaments, as well as non-essential" nightwork was world wide recession in parliamentary work to improve carried by the Post Office Group' of the Society of Civil and Public Servents at the union's annual conference. A spokesman for the group saids: This applies to what we call office work computing, such as the payroll and billing."

"There seems to be a clear nced for planning agreements involving active participation technologies on jobs in order to how to cope with unemployprevent technology "cutting like ment that could be caused by computers," he said.

Speaking last week at the opening of an ICL 2980 installa-He added that he believed there needed to be a complete rethinking of our educational system to provide increased education to cope with increased leisure time and that company planning agreements should examine issues such as flexitime, short working weeks and shorter working lives.

Speaking earlier this month at the annual meeting of Apex, the

that the public acceptability of the new technologies would be vital in determining the rate of their implementation. He feared

that, if handled wrongly, it could lead to "very difficult political Call for legal data exchange times in the 1980s." This is likely to happen, he POLITICIANS from the 20. The politicians would like all

member states of the Council of developments are taking place Europe have called for an in- to data on the work of the other manufacturing industries. It democratic control of the from a range of European datawould, he believed lead inevite executive. At a meeting in ably to an increase in the de-Strasbourg last week, they pro-

liators to have online access

main features of university

computers in the next decade

The board's Network Unit.

neaded by Mervyn Williams at

Rutherford Laboratory, is

packet switching and standards.

in its plans for rationalising de-

placing particular emphasis on

They called for the rapid inmand for public services, such as posed arrangements for ex- troduction of legislation for the education and social services, to changing computerised legis- international protection of percope with the people made un- lative information between sonal privacy with regard to ... computers.

THE INSIDE NEWS-

Number 602

Benn's warning on

ENERGY MINISTER Tony

Benn has called for a company-

by-company examination of the

impact of computers and related

tion at the UK Atomic Energy

Authority at Risley, Lancs (see

page 5), Benn said that the

nomenal," changing the nature

He stressed that he believed

of life in a deeper way than other modern technologies.

pact of computers on society

scythe through employment."



ALTHOUGH the triumphantly returning Hexadecimal Kid is not at I HOUGH the triumphantly returning Hexadecimal Kid is not all human, the rest of Computer Weekly gives priority to flesh and blood; Joining Tony, Benn (this page) in the grast debate on the impact of information technology on employment is Derrick Grover who argues for a basic mational wage for averages as way of all human, the rest of Computer
Weekly gives priority to flesh and
blood, Joining Tony Benn (this
page) in the great debate on the
impact of information technology
on employment is Derrick Grover
who argues for a best mational
wege for everyone as a way of
making maximum use of the
country's human and machine
country's human and machine
grammer teams is the Programgrammer teams is the Programgrammer teams is the Program-

Computerview on Benn 2 Fobus on the infomiation age 2 Looking beyond VLSI 3 Michie's Privateview 5

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In particular, a standard

specification for a "transport

service," which will handle the

interface between X25 and

high-level protocols, is expected

Of the manufacturers which

have so far replied to the board's

letter, most have been non-

meet these standards, saying

they required more investiga-

tion by their technical staff.

Some said that they would be

able to meet the requirements by

to emerge this year.

Govt gets tough on standards

ablishing high-level protocols,

Several committees, including

the British Standards Institute

and International Standards Or-

ganisation are working on a

number of high level protocol

standards and when they are the date.

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formed by the Computer Board that from January, 1979, the availability of internationally puter Board is interested in esagreed networking standards particularly file transfer protovill be an important factor concols which would enable whole sidered by the board in awarding files to be moved from one comuniversity and research establishment computer contracts. From the end of 1980, adherence puter to another of a different make without difficulty. The board also regards the ability to transfer jobs as being highly desirable, but more difficult to to such standards is likely to be obligatory.
These standards will include

Thursday, May 25, 1978

X-25 and high level protocol standards which are still being developed by standards organisations. A file transfer protocol standards included in the board's requirements. The board's action emphasises

the growing impetus towards tying public procurement policies to the provision of standards. The EEC has a working party examining this Issue (CW, May 11), and the US Dr Leslie Underhill, head of Central Computer Services Northern Division of the UKAEA, guides Energy Minister Tony Benn through the operation of one of the consoles at Risley. Looking on is John Evana MP for Newton. government is likely to stiffen xisting standards requirements following a recent report by its auditing authority that government installations were wasting hundreds of millions of dollars through the lack of standardisaimpact of technology

And Prices Secretary Roy Hattersley told a conference on Standards and the Industrial Strategy last week, that the government is placing high priority on relating public proc-urement to standards, and is encouraging local authorities to

do the same. In its letter to manufacturers the Computer Board warned

that from January, 1979, tenders would be judged partly accor-ding to how well they meet networking standards. Networking will be one of the

The next Computatars heat will be on Sunday, June 11 at the Croydon Sports Arens in South London. This will be followed by heats at the Wesidetone Stadium Bloucestershire. Eleven men's end five women's teams took part in the events which ranged from cricket ball, friebee and wellle boot

See page 10 for more Compu

which won the men's plate ran-petition for teams elimiated in the preliminary tound.

The winning teams and the teams of the individual winners will go through to the Computas-FOUR DP departments in the south west now have Computes-ters in their midst following last Sunday's regional heat, held in Bristol, of the nationwide DP tars final, to be held in London later this year. They will be joined connetitions - the men of Wale Gas in Cardiff and the wome from themical engineers Foster Wheelor in Reading plus a team from British Steel in Port Talbot,

The men's team from the Rank Organisation in Plymouth and one of the women's teams from Surmah Oil in Swindon, won the

team events.
The two "blonic people" who
won the individual contests were
programmers Grafium Jankins, of the CM & G insurance group in Bristol, and Christine Charley of Rank Xerox in Mitcheldens,

on June 18, Liverpool on June 25 and Sirmingham on a date still to be arranged.

Graham and Christine, the

South West's Computastars

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political force in the country.

His view that computers and related technologies could lead to a period in the 1980s that will be "politically years". he "politically very difficult to

impact of new technology plays a vital role in the development of on employment should be an contradicted his own analysis. integral part of any national ipproach to the subject.

He is also right to suggest that, if the impact of increased automation is not to lead to drastic social upheaval, employees must take an active role in developing plans to cope with the impact of the techno-

COMPUTER

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Malcolm Peltu 81-261 8033 Doputy Editor Tony Higgins /ony Higgins
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Computer Weakly has a circulation sale weak of over \$2,000 including the high ast fully requested dissibilition in the Uk The International edition, which i published 10 times a year, has a circula-tion of over \$4,000.

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WHATEVER judgment people may have of Tony Benn's political views, there can be no denoted that he is a significant handle" (see page 1) therefore cannot be dismissed lightly. He is right to point out that public acceptability of the impact of new technology place.

take a long time to think the technology and that the effect of information technology through the problem" he indicated a lack of urgency which

For example, he said, he believed that the impact of computers and microelectronics will be "absolutely phenomenal" in changing the nature of life and that it could "cut like a scythe through employment."

His solutions to this potentially disastrous impact included rethinking the educational system to allow for longer periods of education for everyone and

"INFORMATION" certainly

seems to be the current buzz

word of the computer industry.

It is also the most active. Infor-

mation gathers, collects and ex-

Whether anyone actually has

— let alone act on it — is a matter of speculation. Most DP managers would believe that the

main beneficiaries are the very

end users — the waste paper

A conference earlier this year

mation Age" attracted 8,000 de-

probably there as a means of

escaping from their daily dis-

tribution of company info. No

doubt their efforts were dam-

pened when, at the end of the

proceedings, they were awarded a voluminous report on the con-

Of course, the main attraction

could have been the location. Las Vegas. It is a safe bet that

fow evenings were spent perusing the published facts and

igures: other more attractive

figures and events could be pur-

Back home, to add to the con-

tinuous paper-chase, word pro-

cessing systems are steadily in-

filtrating the office. Growth is substantial, but progress could be stemmed following the dec-

lared intention of the govern-

ment to lend a hand. Apparently a strategy is being developed

disposal merchants.

rate work sharing, shorter working hours, etc. to alleviate the effects of mass unemployment. These solutions will take a long time to develop because they involve a fundamental

change in people's social and working attitudes and habits. Therefore, to embark now on shown that they at least undera lengthy process of discussion stand the significance of the and analysis could mean that by the time a consensus view is reached — If ever — it will be too understanding of society at late; decisions will have been large to the issues involved, so made by default.

information technology wor- ground.

king party, the TUC has under-taken a study of the impact of micros on employment and the home policy committee of the Labour Party under Benn's chairmanship, is also analysing

This increase in political activity in taking information technology seriously suggests that the lack of urgency might soon go. It is even in onceivable that by the 1980s, if not before, information technology will be part of election manifestos and a

There is an immediate responsibility on politicians, particularly those such as Tony Benn and Sir Keith Joseph who have technology, to start a campaign to increase the awareness and that the public debate and public Over the past few weeks the Tory Party has established an rational and informed back-

The information

time to read and digest the existing volumes of information For one member of The Friends of the Earth community, however, a reversal in the marketing sales graph would not be unwelcome. A pamphlet published this month suggested that word processing will assist the cause of unemployment.

in the US entitled "The Inforlegates, many of whom were which is probably already the case. The "friends" have forgotten the basic rule of business life

more information which is pro-

tries, paper remains the base of printers are being developed to

troubling the DPM is the tech-nological advances being made by office word processing

Automatic typing systems are rapidly becoming automatic computing systems. The DPM would like some information himself as to where all these



SOME years ago in a college of higher education there was a very old computer. The machine and its peripherals worked well enough and the system was mainly used to give first year undergraduates "hands-on" ex-

But one day a tedious fault arose; the light indicating that the CPU was overheating (in really was an old machine) would come on after a short period of use. This meant that the machine was switched off and the engineer called. Of course, when he arrived the fault would not reappear.

After weeks of frustration, checking the air conditioning, switching off rarely used peripherals and installing a fan, the kit was left switched on until the engineer arrived. It was no use as he could not identify the fault. This was to be expected, as

On I just took the bulb out of the console. The moral: To every difficult and complex problem there is usually a simple and straight forward abswer. Or don't always assume that the needle is in the haystack.

"Suddenly It's Simple", which cashier with the Abbey Native has won £100 for Doris Brandon Building Society in London and in a competition run by Grand 10 years ago, which trigged



Doris Brandon

tems division of the Grand Godbold/Tas Advertising Co Metropolitan group.

Mrs Brandon will have the Peltu and Andrew Bainbid pleasure of signing her own managing director of public relations consultants Grafts cashler in the central accounts - Consultants Ltd.

the slogan idea. At first, she said, she found prospect of submitting data computers daunting, but the she realised that with the me training, suddenly it was sing however complex the compute system. Mrs Brandor slogan will now be used by Gig in promoting the division's gr

The two joint runners up i the competition came for computer operations: "Webs: Real 'Time" from Lee Denna "We are Minding the Stor from Nick Devlin.

The competition judges was sales promotion consults Lady Christine Vavasour, Bu Metropolitan Systems, the sys- Eames, managing director puter Weekly editor Maken

Terminals for disabled

THE AGM of the flourishing and it was hoped that the sare BCS Specialist Group for the kind of support might b Disabled took place at ICL, Lus ton Road, London.

Officers elected for the 1978. It had therefore been deile 79 year were: chairman, Derek not to use the money from \$ Nicholson; vice-chairman, Tom Computer Weekly Ball to de! Manjil; secretary, Ron Potter; lop Mate, but to keep it ut treasurer, Adrian Stokes; vicetreasurer, John van Dongen.

Julia Howlett reported on research being carried out on aids to the handicupped. Work on Mavis, the micro-based activities such as courses audio-visual information sys tesearch without having the tem, was going well at Ferranti, on lump sum donations.

emergency fund. It was pointed out at t meeting that the group no some kind of ongoing finance support, in order to mainte

obtained for Mate, anothers

minal for the use of the disalke

Warning from Benn

From front page

clerical workers union, Prime Minister Jim Cullaghan Esued a similar warning about the inpact of electronics in general.

As chairman of the Home Policy Committee of the Labour Party's National Executive committee, Benn has initiated a study on information technology (CW, May 18), which will examine the need for an indigenous computer and microblectronics industry and the user reaulrements.

 Unemployment is not ank? puter technology because the teal cause of unemployments according to a motion carried the Society of Civil and Publi Servants at its annual conference in Bournemouth Wik recognising that computers \$ have an impact on jobs, them tion culted for a rejection d "alarmist" forecasts about the negative effects of computers employment. Computerview, page 2-

LEAR SIEGLER TELETYPE ADM 1A ADM 2A Model 43 ADM 2B ADMISA 30ups 1/2cpl SCI Bystems LASS Officeration R Rotary Printer f110-S VT 52 LA 180 2.200cps

Getting to grips will the right slogan the right slogan the right slogan on the right slogan of the right slogan on the right slogan of the right

This was made clear last week by Mr Christopher Layton, head of the Directorate General for Science and Technology at a meeting of the London Europe Society. He said that the July meeting of the EEC Council will be presented with a report from the Directorate that will set out the potential high growth industries the Community should be supporting for its future

Amongst these industries will be microelectronics, which Layton sees as being critical to virtually all future industrial activity in the Community.

design and production equip-Although, in theory, not in favour of national support schemes for microelectronics in Europe, he indicated that any European planning would be related to the national efforts

include as an objective the de-

velopment of "centres of excel-

Each would become a deve-

lopment centre for one of the

aspects of microelectronic pro-

duction, such as computer aided

lence" around Europe.

now being made. He felt it was important that the Community did not become "hospital for lame ducks, but a nursery for new industries." won't just go away," he said, "so shop of the world in high addedvalue goods and services. We

Electronics, he pointed out. also had tremendous potential for all industrial activity, "When even the motor car can be made into a 'computer system'" he said, "the time has come when whole industries could follow the fate of the Swiss watch pusiness if Europe does not have the technology.

In the computer industry generally, which was growing at 15% per annum and continually creating new employment opportunities, there was still a need to encourage further growth in the market. To help spur this growth, he highlighted several areas where the Comnission could help.

Firstly, it could continue its work in developing European standards. It could also bring together national procurement policies. Finally, it could help weld national support schemes for industry into harmony, which he didn't interpret as

Layton . . . an objective is the development of "centres of excel-' around Europe.

The Council had already been asked to support some applica-tions. One of these is for customs systems, with the aim of eventually producing a uniform customs operation throughout

He was also keen to see support for more than just comnuters alone, and referred to what the French call the "periinformatique" industry. Layton also wanted to see a much closer integration of the computer business with the telecommunications industries, bringing them together to form a common European information sys-

DG's boost for systems builders A MAJOR expansion of its hardware software packages for price up to £11,300. business systems builders and a

one-board microcomputer have been announced by Data The two new packages for the system builder are the CS/60. based on the Eclipse processor.

and the CS/20, a Micronovabased system. The CS/60 costs from £26,000 upwards, the basic system offering 32K words, 20 Megabyte cartridge disc system. Interactive Cobol compiler,

operating system, 180 chps printer and VDU. At the other end of the scale, a 64K word system with 50 Megabytes on disc, magnetic tape unit, VDU and printer costs £45,000. Maximum configuration gives 128K words, 12

video terminals, 760 Mcgabytes on disc and two printers. The CS/20 is a floppy discbacked system, and for £7,000 the user gets a VDU, moveable keyboard, 32K words of main memory and two 315K byte floppy disc units. Adding a 60 chps printer and two more

Interactive Cobol is available with the CS/20, and is claimed to enable secretaries and clerical staff to communicate with the machine without having had

prior computer training. The two new lines comple ment Data General's CS/40 systems, which have also been enhanced with the addition of disc units up to 50 Megabytes and 180 chps and 240 lpm printers. The CS/40 is the basis of a new line of business systems from Itel, and the big West Coast leasing, services and OEM company is expected to add the new Data General packages to its catalogue.

Announced last week in the US, the new MicroNova board computer comes with 1K word of static RAM, chip carriers for up to 2K words of PROM. asynch communications interface and a 32-bit wide inputoutput port. Up to 32K words of off-board RAM, PROM or a combination can be added. The boards, designated MBC/1, cost \$725 in single quantities.



It took taxi-fleet owner Stanley Perkins to discover yet another use for Dun & Bradstreet.

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Mr Stanley Perkins, Hampstead taxi-tycoon, put us.

right. He ordered the Dun & Bradstreet Registerall five volumes plus Index-then stunned us by saying the contents didn't interest him. (Details of 200,000 companies plus credit ratings!) What he wanted was the sheer prestige and respectability that the books would lend to his offices: "My customers will be impressed no end."

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agn **5**0... COMPUTER WEEKLY

MAY 25, 1968
This first English Electric System 4/70 was delivered to the Morth Western Electricity Soard & Marchester offices only five maints late only five maints late only five maints according to to the first of value, according to rights of electrical by the Miristry of Jectinology . Educational comparing received a fillip following hever that these Digital Equipment LING systems were to be installed in London and Fortombuth colleges. To compose it for long strain are designal electric A/70 these of ayelen worth nearly £1 million. From ISIM same a computerized typing system that it was classed, "could repeat the typing pool."

extends to the typist
which will involve the National machines. It seems these are than words.

office developments are leading.

duced the greater the demand. However hard the industry company information operations. Even COM viewers are having to incorporate hard copy printer attachments, as do VDU terminal systems. Already

rapidly expanding into data ng systems in their own right. The latest equipment would appear to be more at home processing information

This is based on the notion that two word processing machines will be able to tackle the workload of 10 typists -

- that work expands to fill available time. Not that the word processing trend should cause the DP department too much anxiety. The

interface with viewdata screens. What, however, should be

MAY 25, 1968

assembly line on the day the engineer was string his Il-plus, and no computer manufacturer can afford to train engineers can afford to train engineers that retrospectively. Eventually, a very sentor engineer, who had been trained for this machine, was called from the regional office. He worked for a while then pronounced the fault cured—and so it was

fault cured—and so it was.
When he was asked by the relieved operations manager how he had done it, he replied.
"Oh, I just took the bulb out of the console."

Submitted by J. R. Gescoigne of Reading Sette, who wins this week's to interrupt prize.

LOOK beyond the current deve- concrete proposals by the end of have a tremendous potential in lopment work in Very Large the year, and these will probably Scale Integration in microelectranics to the future era of submicron component technologies. That is what the EEC Commission is being urged to

He is hoping to have more

Hopes for medical DP

THE recently-formed European Federation for Medical Informatics will hold its first conference at Cambridge on September 4 to 8. The organisers, the medical specialist groups of the BCS, want to see this congress mark a turning point in the drive to make medical com- as medical records, health care

An important part of the condoctors, nurses, and health adorganising committee say, are 39262.

patient monitoring and diagnostic equipment. More than 200 papers will be presented over the five days, under a range of headings such puting have a real impact on the health of the community.

planning and epidemiology, medical decision making. medical decision making,

aware of their potential not only

in administration but also in

modelling, databases, nursing, ference will consist of intro- and general practice. There will ducing medical computing to also be a small exhibition of equipment. ministrators who have no prior knowledge of the subject. Many

people in the health service, the ferences. Tel: Uxbridge (89)

Scots GPs lead way

Scotland without opposition from doctors on grounds of privacy, according to Dr John Bryden, Chief Administrative Medical Officer for

according to Dr John Bryden, Chief Administrative Medical Officer for Argyll and Clyde. Commenting on the recent controversy over the proposed English system (CW. May 4) Dr Bryden pointed out that Scottish GPs had been consulted at length before the introduction of the system, and specific doctors had been appointed as responsible for overseeing the confidentiality of records. This, he felt, made all the difference over the acceptability of the system.

Dr Bryden, who was presenting the plans for the European Medical informatics Congress, also expressed the view that the fact that the UK had been slow in introducing computers into medicine was not necessarily a bad thing. The US, he said, had spent tremendous amounts of money on medical computing and not altered the health of the country at all. The opportunity now presents itself in Europe for computer, properly applied, to make a real contribution to patient care.

ICL-Hitachi techno dea

AS forecast (CW, May 11) a boards. They also looked in at technological exchange agree-ment between ICL and Hitachi has been signed and the first visit under the pact took place

two weeks ago. Specialists from Hitachi visited ICL's microelectronics plant at West Gorton to look at

computer aided design techniques for the layout of multilayer of manufacturing information.

Cache debut at Univac THE most noteworthy feature of the new Univac 90/80-4 model

January 1979 delivery (CW, May 18) is the addition of a large 32K byte cache memory, which allocates 16K bytes for instructions add 16K bytes for data.

It is the first time that cache has been used on the larger of has been used on the larger 90 Series machines, although the 90/40 adds an instruction pre-

fetch to the basic 90/30. COMPUTABITE MICRO MAGAZINE

from Computer stores or it from Computeblis, 41 ent Suset, Valvil, Shmer

The 90/80-4 cache is in emitter-coupled logic and has a

the research and advanced de-

velopment centre at Stevenage.

reciprocal visits of high level

technological development staff and exchanges of views on fu-

ture industry developments. No

The agreement is confined to

boosting the performance by up to 35% over the 90/80-3. It is also claimed to be 16 to 20% more powerful than IBM's 3031, but is also more expensive It has a maximum of eight channels, compared with six on the 3031. It is available as a field upgrade, costing \$236,900, from the 90/80-3.

55 nanosecond access time,

Low-cost system THE ability to run the CTL range of high performance soft-ware, including the Modus

operating system and the TAD Transaction Application Driver is a key feature of the new low-end processor, the 8020, appounded by Computer Technology.

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For lost lovers

WHO says computers don't bring happiness into people's lives? As a promotion gimmick for a new film called "If Ever I See You Again," a Pertec mini system is being used to provide — thus, individual privacy is a re-uniting service for lost lovers all over the US.

film opens, phones will be manned at Pertec's head- lightning romances on prequarters (just down the road from Hollywood) to take calls your chance! from people looking for someone they have lost touch with. All the info will be fed are faminine, and a five year-oil into the computer, and when and if the other party phnes up, they will be put in touch and —

Cookery corner

COMPUTER people are, of their needs does not seem to have reached Barnsley, where a new council computer centre was opened with some

A Ratepayer candidate com-

O''Our only problem at the moment is that our engineers are getting bored. Our 470 systems invariably have an up-time of 88.5% and we are now thinking of having programmers do the maintenance, assisted by our maintenance, assisted by our Amdac diagnostic system which Enks every Amdohi 470 by sotellite to Sunnyvale." — Dr Gene Amdahi, quoted in the French

Pertec primly points out that an individual "can only be reached by the person he or she

built into the system." There will be a terminal at For two months after the the NCC at Anaheim next month, so if any of you had vious trips to the States, here's

machine is decrepit — and that's official. Writing about the improvements to ICL's 2903 ieries, the Gorman weekly Com The film, apparently, is a "Facelifting fitr eine alte Dame" (facelift for an old lady).

course, noted for their high living, but understanding for eremony recently

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plained bitterly that the buffet lunch served on this occasion was "a disgusting waste of

The menu consisted of decorated boars' heads, two large salmon, four hams and tongues, sliced meats and salads, with pork pies, cheese and biscuits, Black Forest cherry cake, coffee, beer and Apart from the fact that de-

corated boars' heads are not, in fact, edible, I'm sure you will agree that in these stringent times Barnsley Council should have shown more constraint.

I mean, really, pork pies, cheese and biscuits — how decadent can you get?

Introducing realistic accounting

for future employment

By Derrick Grover

concerted interest from people in different spheres as the unemployment that is anticipated from the escalation in the use of computers — especially when microprocessors become so cheap as to affect every walk of life and mode of employment.

Mike Cooley of AUEW/Tass in his address to the Datafair 77 conference referred to the problems of extensive unemployment especially if it reaches a level where the economy can no longer support subsistence payments. He envisages that such a situation will occur because companies tend to make work processes capital intensive rather than labour intensive.

Barrie Sherman, research director of ASTMS (Futureview, CW, February 23), speaks of the impact that microprocessors will have both on future employment and the types of employment available. He postulates various possible actions and in particular decreases. and in particular draws attention to the danger of taxing multinational companies unfairly since this will cause them to invest elsewhere.

I have postulated in a letter published last year, that the problem could be allevinted by the use of realistic accounting when considering the State subsistence paid to unemployed

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operating systems

Let us first make the assumption that unemployed people will be paid a subsistence allowance sufficient for them to survive with a measure of dignity. We are then faced with the reality that the saving resulting from making a person unemployed is not the salary and the employer but the difference between these and the unemployment subsistence allow-

Industry, as the producer of wealth, ultimately pays for the unemployment subsistence and this fact should be recognised in the accounting procedures when assessing the merits of abour versus capital equipment. Industry, as the pro-

ducer of wealth, ultimately pays for the unemployment subsistence and this should be recognised in accounting procedures.

John Harris and I (Letters, March 16) have postulated the realistic accounting that would arise if everyone were paid a basic national wage with the employer supplementing this by a smaller salary such that the employed individual receives a total payment similar to the present. On average the employer's expenditure would be the same since higher taxes would pay the basic national wage allowance.

It would not then be beneficial to replace people with capital equipment until the equipment realised greater savings. It would not stop the progress to be expected from investing in more efficient techniques; it would simply delay these investments until they were economically feasible when costs of making people unem-ployed. Accordingly, unemploy-ment with its effects on morale

less has the option of seeking more fulfilling employment elsewhere, bearing in mind that other employers are more likely to take on staff due to the smaller incremental cost of employing people.

Harris suggests that if people are paid a basic national wage even when not working then there is likely to be more time lost through absenteeism and industrial disputes. One answer to these problems must presumtably lie in incentives for people to behave as a good employee and if it is necessary for an employer to pay a higher salary.

for good performance then this is indeed the cost of employing labour which must go into the cost equations of employment. The stabilising effect of national market forces is necessary to optimise the economy and it becomes more acceptable to use a free market philosophy if the basic wage facility alleviates the hardship that has occurred to

Joining the great debate on the effect of com-

puters on jobs is an executive responsible for

licensing and funding of work associated with DP. He argues that a basic national wage for all

would control the distribution of a portion of

the national wealth and would ensure that society maximises the utilisation of those resources in human beings and capital equip

Harris raises the objection that "If labour is comparatively cheap then the employer may not invest in the latest equipment which could be detrimental to the national long-term interest." The date at which an employer invests in superior equipment should be dictated by the interest to the company since if it is in the company's interest then the national interest, being that of a collection of ies, also benefits.

Investment in new equipment will not, of course, be determined by the short-term view but will depend upon benefits both in the present and in the future, bearing in mind the need to gain experience of new techniques to be competitive -- es. pecially against overseas com-

It is the job of management to draw up this equation so that the long-term investment in equipment marries with the short term interest in a manner which is of most benefit to the com-

Opinions on how to equate the short- and long-term interests will no doubt differ. The realistic assessment of the opportune time for investment will not be endangered by introducing marginal costing for labour, provided the marginal costing is itself realistic and not disguised

A difficulty in the scheme arises, as Sherman has pointed out, if a multinational company taking account of the realistic costs of making people unemtion might arise if a capital in-

Beacon raises the interesting question of the effect of subsid-ising employment on imports and exports. A subsidy on curtain industries to encourage ex-

the first place in order to can the industry through an integrowth phase to a mature per tion where it becomes set supporting. Subsidising the dustry is simply a way of & guising the true needs of h industry and this will introdu the dangers of unrealist accounting. Some recent corresponde

has tended to equate subide. with a basic national wage his important to distinguish be ween a subsidy, which is pecuniary aid almed at selected recipients in order to alleving the natural market discipliz and a basic national wage who performs the role of "undergo ning" the employment system; provide a foundation on whi to build. In the latter case is free market discipline conting to apply in order to judge who products and services the or sumer really wants.

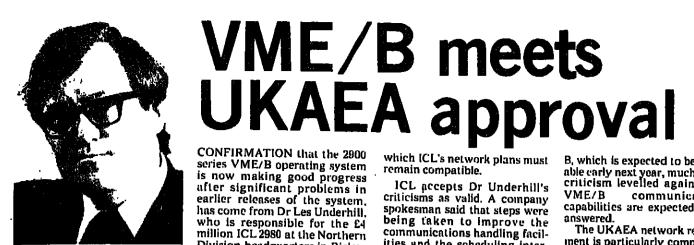
It is interesting to compa the performance of a count using the concept of a banational wage, BNW, with it of a sister country which operating in the convente mode of paying a separater employment subsistence to redundant employee.

Let us suppose for simple that the countries are similar respect of resources at capabilities and then compa their performance in the fulse when nucroprocessor system and other capital equipme The sister country has the

burden of paying subsistence large numbers of unemployed who make no contribution to the economy. The BNW county has fewer unemployed became realistic accounting with mar glinal costing justifies the employment of larger number of people to contribute to be economy in place of a propertion of capital equipment which does not in this system except the threshold at which it is comes economic to insis Economic human resource which would otherwise he used, are available to produce wealth. The BNW county be efits from a higher standard in the standard of the s living with a surplus to pay

that we can effectively contour system as complex as a paint system as complex as a paint seconomy better than the size rally occurring forces of a seconomy better than the seconomy better that wish to safeguard the paint thou from the dangers of the though the safeguards should be simple and capable of better the free market force. The best troduction of controls and sides has the effect of display sidies has the effect of display and, although this particularly and, although this confuse the critics, it is to be characteristics. disadvantage of the country is

A basic national was far is would control the distributed a portion of the national wear, a portion of the national be set. The remainder could be set jected to the discipline of the jected to the discipline of the free market which coupled the life accounting well remainded the utilisation of the resources in human beings a capital equipment.



Insac's US plans for viewdata

Energy Authority.

Underhill pointed out that the

initial problems with the 2980

"have mainly been concerned with the VME/B software."

"While the overall specifica-tion of this software is very

good, perhaps the best in the world, its early release gave rise

to some dissatisfaction," he

least, these initial problems are

being sovied, Dr Underhill

quoted benchmarks figures

which display a considerable

improvement in performance in the latter half of last year (see

Figure 1).
The target for the bench

marks, which passed perfor

mance tests in December and

reliability trials in February this

year (CW, May 4) was to ensure

that the 2980 could handle

throughput six times more

quickly than the ICL System

At present, the Risley 2980 is

handling about 2,500 jobs a

week, running about 12 hours a

day with 30 online terminals and cight Remote Job Entry streams,

but the workload is likely to more than double by the end of

Dr Underhill stressed two

areas of VME/B with which the

Authority is still dissatisfied -

the reliability of the com-

munications system and better

interfaces to the scheduling sys-

tem to enable the UKAE to in

corporate its own automatic

scheduling systems, originally

developed for the System 4/72.

Both these requirements are

important to the UKAL as the

Risley 2980 has links to six

establishments at Windscale,

Dounreay, Springfields, Capen-hurst, Culceth and Risley, with

Windscale, which currently has an IBM 370/145, is con-

nected to Risley via a remote

ICL Communications Network

Processor at Windscale using

the HDLC protocol which is one of the international com-

more sites to be

4/72, which it is to replace.

As proof that, for the UKAE at

PREPARING for the New York launch of the Post Office's Prestel viewdata system, Insac Data Systems has appointed Tom Reid to the post of Operations Director He joins Insac from ICL Dataskil where he headed the Advanced Application Sec-

His responsibilities at Insac will include product development liaison between member organisations and the Insac international software marketing companies.

Government computers

UNDER a new procedure for the procurement of government computer systems costing up to £150,000, announcements will ppear for time to time in Computer Weekly, giving brief details of equipment required. Prospective suppliers can then write to the Central Computer Agency for full de-

They will receive a "Summary of Operational Require-ments" in a new standard forments" in a new standard for-mat, produced by the user de-pariment. The specifications in this will be classified as "mon-datory" or "optional" and to be considered, a supplier will have to be able to satisfy all the man-datory requirements.

Having seen the SOR, firms will submit outline proposals to the CCA and a short list of these will be drawn up, to be followed by detailed discussions.

Two notices have so far appeared under this procedure, one for a key-to-tape system for the Department of Trade at St Mary Cray, and the other for a multiple of the system for the system for the system for a multiple of the system for a multiple of the system for the system f nuitiplexar system for two ICL 19048 machines at the Ministry of Agriculture, Guildford. There is also a requirement for a front end processor for these machines.

Advanced modems

series VME/B operating system

is now making good progress after significant problems in ICL accepts Dr Underhill's earlier releases of the system, criticisms as valid. A company as come from Dr Les Underhill, spokesman said that steps were being taken to improve the million ICL 2980 at the Northern communications handling facilities and the scheduling inter-Division headquarters in Risley, Lancashire, of the UK Atomic faces but would give no commitment to dates by which the Speaking last week before the insuguration of the system by Energy Minister Tony Benn, Dr. problems will be resolved.

It is understood, however, accounting and administrative that with release 5X32 of VME/

August 31, 1977 December 12, 1977 Elapsed time Processor time MAC-dilation 50 terminals 20% MAC + Batch 101 mins Batch elapsed 66 mins 77 min **MAC** dilation

ment is particularly complex, as

it has to cope with a wide range

of different tasks, from large-

scale scientific and technical

calculations to commercial

Figure 1: Risley 2980 performance benchmarks compared to targets aimed at proving the 2980 is aix times more powerful than a System 4/72. Note: MAC dilation is the increase in time running a program from an on-line terminal in a multi-access environment compared with the time of stand-alone running of the program

35%

Overall drop in equipment sales

A MARKED drop in overall sales and exports by the UK computer equipment industry between the third and fourth quarters of last year is shown in the latest De-VME/B communications partment of Industry figures capabilities are expected to be from the Business Statistics The UKAEA network require-

Mainframe sales fell from £57 million to £47 million between the two quarters, peripheral sales slumped from about £120 million to around £95 million and overall sales came down from £206 million to £171 million. This made them only marginally better than the £163 million figure chalked up in the fourth

dramatically from £29 million to less than £18 million between the two quarters and were actually lower than mainframe exports in the fourth quarter of 1976 which were about £20m. Peripheral sales at £45 million.

were also well down on the previous quarter and marginally ower than the year before.

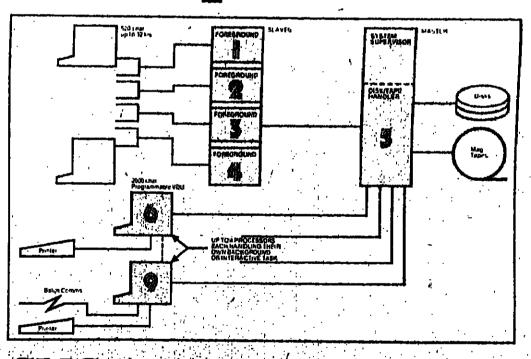
In contrast to all this, total mports of computer equipment fell only slightly between the third and fourth quarters of 1977, from £182 million to £180 million, and imports of mainframes actually rose slightly, from £20 million to £21 millio

Word processor from GCS

A NEW shared-logic word processor using intelligent terminals has been announced by General Computer Systems. Called the Datatext IV, the system uses a specially-designed VDU 96 characters wide that can be switched between 10 and 12 characters to the inch, and contains its own memory and microprocessor, a Zilog Z-80.

Up to 20 typing stations car run on one system. Text is stored on a 10 Megabyte Pertec disc unit, 5 Megabytes fixed and 5 Megabytes removable, Alternatively, a CDC 30 Megabyte drive can be used. Printing can be done with either Qume or Diablo daisy wheel printers, or line printers if high speed is

Let's put you in the picture



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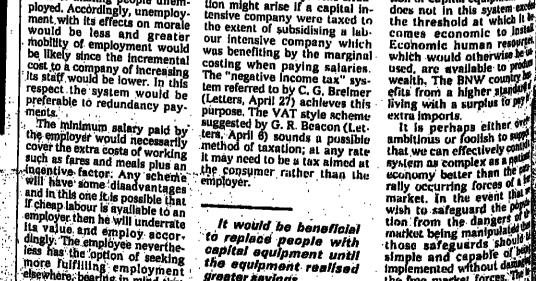
Because well informed

more power for validation more power for supervisors more power for terminals

more power for disks data prep people know that MPK . more processors = more power more power = more work

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from Racal-Milgo A RANGE of microprocessor-based, voice band modems de-synchronisation in 30 signed to provide flexible net- milliseconds. Barry Stuttard,

Developed by Racal-Migo in the US, the MPS series consists of four models, the 9629, the 9801, the 4829 and the 4801. Operating at 9,600 or 4,800 bps, they are compatible with CCITT V29 and Racal-Milgo's earlier

The market in Europe, Africa and the Middle East for modems, other than for PTTs, is estimated to be worth about \$60 million, and Peter Hare, Racal's director of product planning, commented, "We would not be embarrassed to get the whole market."

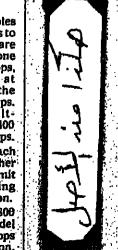
Post Office approval has been applied for, and the company hones to have it in time for the start of deliveries in jply.

The moderns incorporate a to \$5,200 for a four port 9,600 bps model to \$5,200 for a four port 9,600 bps model with the Dynsport option.

maintenance, have been an that automatic equalisation dounced by Racal-Milgo (CW. techniques are cheaper than manual ones for 4,800 bps operation, and essential for 9,600

The Dynaport option enables the full bandwidth of 9,600 bps to be used however many ports are transmitting at the time. If one port is transmitting at 9,600 bps, a second one can start up at 2,400 or 4,800 bps causing the first to drop to 7,200 or 4,800 bps. Three ports can run simult-aneously at 4,800,2,400 and 2,400 bps, or all four ports at 2,400 bps.

Modem sharing allows each port to be shared by two further remote modems which transmit



Results count more than haloes...

IN my childhood we were never left in any doubt by our American mother: results not haloes are the measures of hings. A can opener might be of surpassing beauty. It might be based on a stunning new mechanical principle. It might be an authentic heirloom of the Romanoffs. But the abrasive question would follow: "Does t open cans?"

On my first evening here in Cleveland to lecture at Case Western Reserve University, I chanced in my TV knob-twiddling to hit on Fred Astaire in "Broadway Melody of 1940." Another world from technology — but the "halo effect" can be elicited by putting the question: "In the history of the Twentleth Century. which name will stand higher on the list of its greatest dancers, Nureyev's or

So much for "halo" in the dance. Now turn to technology. In halo-conscious Britain for how many years did we fail to read the cost-benefit writing n the wall about Concorde How long did Freddle Laker battle before he was allowed to put his proved economies at the service of Britain's trade? In 1972-73 the Science

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Research Council received two reliability. We must be careful reports on long-range policy for computing science and machine intelligence. The one which said "Build it up!" was the careful work of experienced computer professionals. The other, which said 'Wind it up!" came from a spectacularly gifted amateur accoutred with knighthood, Fellowship of the Royal Society, and other halogens. One is reminded of the pres-

tigious Committee on Imperial Defence, chaired by Lord Esher, which before the 1914-18 war recommended an end to research on heavierthan-air flight and redeployment into balloons.

Esher subsequently had the grace to reverse himself.

There is much halotropic nonsense to be pruned from Britain's technological garden. But we have sharper instruments than ever before. Computing is always posing the question: "Does it open cans (or calculate payroll, or predict weather, or allocate hotel rooms, or factorise large numbers, or play expert chess, or whatever the user spec hap-ייי?(pens to be

British computing has always had an eye to

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not to sell ICL's veteran 1900 series short on this. In the academic world the recent achievements of Brian Randell's software research team at Newcastle are dedicated to new fail-safe and errorrecovery methods. No computing research in the world is more highly respected than Tony Hoare's at Oxford, on how to prove programs correct — the mathematical side of the

reliability coin. Nor should it be forgotten that Edinburgh's computercontrolled robot FREDDY was one of the first exemplifications of a new principle of reliability, as an alternative in appropriate cases to the edundancy principle of 'majority vote' logic. The FREDDY hand-eye algorithm for sorting objects out of a disorderly heap cyclically processed a small library of

methods on the principle "if FAIL then try next method." Every good computer man will warm to the missionary in Brazil, who escaped ingestion by the local cannibal tribe when he produced and demonstrated a portable fire-lighter. The natives at once worship-

ped him as a god, and for years



enjoyed a life of divine privilege. But eventually he took their chief aside: "I cannot deceive you. That firelighter is only a mechanica device I bought in Harrods."

"We all know that," replied the chief, "and most of us anyway have our own lire-lighters. But yours works."

I cannot close without con ceding to the halo effect, to the extent of offering my creden-tials for pontificating on Nureyev versus Astaire. On the testimony of a mutual acquaintance I can cite Nureyev himself as sharing my

estimation of the matter. Yet Astaire, it seems, takes the opposite position, viewing himself (see David Niven's "Bring on the Empty Horses") as just a hoofer.

So you can never tell with haloes. Where the game is skill perhaps the best way is the way of American technology. After all, haloes never did win ball games.

Donald Tichie

Care is needed when relying on one critic's view

RECENTLY, the BCS Algol specialist group sent a book to three of its members to review. The difference in perception of the three reviewers makes an interesting example of the care that should be taken in relying on one critio's view. The book under review is "An introduction to Algol" by F. R. Watson, published by G. Bell & Sons, price £2.50.

The group's secretary, Brian Balley, thought: T do not like the many for-

ward and backward pointers within the text — p2 line 5. (1952). It indicates that the book has been badly thought out.

Large number of exercises with answers — good, but too many are mathematically based.

• Flow charting - only standard seems to be to cram an example on to one page.

• Very simplistic view of Algol

not really getting over the major principles of the language. One feels that the examples could be written, with very little loss to the reader, in Fortran or Basic.

To conclude, my only major reservations are the first and last. Otherwise students should find this a suitable primer to make the transition from classical mathematics to simple computer programming of mathematical exercises.

mathematical exercises.
Committee member Nick Rushby commented:
Although the title does not make it clear this is a book labout Algol 60 and not any later derivative of that language. I like the general approach of the book, through flowcharts and program reading, but feel that this could fave been developed to greater advantage, by incorporating some of the philosophy of structured programming. The idea of a hierarchy of

flowcharts (program structure) is only hinted at, and then not in such a way that students are likely to adopt it as good prac-tice. In principle, the practice of delaying the explication of the finer points is good, although the resulting plethora of optional goto and come from statements can make it difficult

going for a vaciliating student.
I regret the mathematical bias, but realise its inevitability since the book was written to be implementation independent. le the character and string handling necessary for nonnumerical work are not! The level is right, and the price (£2.50) acceptable for the target

However as a contrast the Algol specialist group's chairman Richard DeMorgan concluded: I found this less an introduction to Algol than a book on elementary program. ming which could perhaps, ales,

better have used Fortran. Terminology is often poor. For example, the author speaks of subroutines without explanation, then states that in Algol they are called "procedures." Other examples are "transfer

As for its coverage of Algol, booleans are not mentioned, except as a footnote on p 46; procedures are treated very scantily; there is a superfluity of semico-lons; else is introduced too late, therefore many examples have too many labels. Identifier names are, in general, un-

imaginative. The use of \$130 Algol without explanation of its non-standard non-procedural input-output

scheme is unfortunate.
Some of the language independent presentation; features
are good bymbols in boxes
avoid confusion. Flowcharts, 1 suppose are inevitable, but were

PROGRAMMER NOTES

Chief programmer team is key to many successful projects

WHAT comes after structured programming_ top-downstructuring and Hipo, hierarchy plus input process output, diagrams? The answer is simple; teamwork.

Chief programmer teams are hardly the latest news, but lately a few moans have been heard within the programmer departments complaining about lack of communication. A true chief programmer team in the IBM style has contributed to a very large extent to many successful

Deliberately a team is relatively small, consisting of the chief programmer, three to five programmers, a librarian and this position is the unusual. interesting one - and other specialists as needed. A specialist could be a teleprocessing or database expert.

The chief programmer is of a senior level and a combination of programmer and analyst. It is this person who is esponsible for the development of the programming system in every respect. Duties would therefore cover technical responsibility for the project and management

The chief programmer, in a technical capacity, will assume the role of writing any highly critical code and directly specifying all the other code needed for the project as well as reviewing and overseeing the integration of all the separate program modules. He is supported by a back-up

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programmer who should be not only capable of standing in, in a technical and managerial sense, but totally familiar with the project's development status and internal technicalities. This may seem a rather frust-

rating job, always the brides-maid and never the bride, but it can prove more interesting if loped as a reviewing-type position. Duties could perhaps include organising independent testing or even exploring alternative programming design ideas, But in general the job entails being involved with the normal design and review work.

TREND

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lysts or programmers and coul even work with more than on chief programmer team. The variable nature of projects and their estimated time lengths will necessitate occasional shuffing of staff between projects.

The last role, but arguably the one which really makes thetem succeed, is that of librarian By said this position could be filled by a secretary, or junior programmer. It could make an easy introduction to programming for perhaps a school leaver, a operator or data receptions

After some training in K and basic operating systen! capabilities, this person will be the only one who deals direct with the computer. Responsible ities will include producing ICL assembling, compiling, link editing and making test rms Whether this is done via a teminul or on cards is dependent on the installation. Team members should never attemy to by pass the librarian.

The librarian will also keep? detailed records of amendment latest versions and meda results of runs and tests. So. attempting to by-pass the libra, man could result in wreckingthproject as a whole.

Once a team is fully estrablished, control and cost munication should improve Programmers will also be feet of the possibly irksome tasks physically organising prograamendments and comput runs. Structured walk-through should naturally become and, dinary occupation and not if shouting match.

IBM and many users had found such benefits as "67% of all errors discovered before the ting and an estimated 40 hosp of test time saved," by virtued structured walk-throughs. Bis can be very efficient and sale fying to the personnel involved

Readers with views are in vited to write to Programm Notes. For example, should the essentially technical role of the chief programmer actually by

mode, or to submit "over the counter" batch jobs.

Sinclair, emphasised rapid turnround as a major competitive feature of the new service. The large Paris configuration, running under MVS and TSO, would appeal, for example, to those wanting to off-load urgent

SIA first implemented a link to

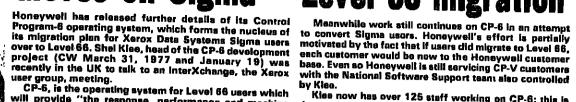
THE Algorithms Section of the journal "Applied Statistics" is now available as a separate

ONE of the classic problems of son each time and thus reducing 15 persons of each religious per-suasion found themselves beset by the elements on board a ship salling to the Holy Land. The storm reached such a height that the daptain decided to throw 15. of the 30 passengers into the sea, to lighten the vessel.
He asked them to form a

circle, and announced that he would count to place round the ring from a certain point 15 times, eliminating the ninth per-

ancient times was the the number gradually to 15.

See page 53 for solution



CP-6, it the operating system for Level 66 users which will provide "the response, performance and machine interface which Sigma range users had with CP-V." Klee denied persistent rumours that CP-6 will replace Honsywell's own large-scale operating system GCOS. "In the long term future, perhaps five years, CP-6, GCOS and Honeywell's Multics may merge, partially to remove the need to support a multiplicity of operating systems." Klee now has over 125 staff working on CP-6; this is

port from PPL

Hourds Computing is to act as UK agent for the one-pass Pascal compiler, written by OMSI Software of Oregon, for Digital Equipment PDP-11/34 Used in the US since 1975, the

gress on queries. compiler runs under RSTS and But the new technical support can also be used on Systime's arrangements should not only 5000/6000 range. Pascal prosolve the delay but also help to grams are said to execute 25 gear the package directly times faster than equivalent owards the UK market. Q-Pac Basic Plus programs on the has its origins in South Africa where it is still actively mar-

plans for Q-Pac support used by nearly 100 UK sites, is to thought that some South African personnel will initially join be supported by a separate

company from its marketing the support company, Q-Pac agents, Package Programs Some members were sceptical The announcement was made that the new company was just a at the annual general meeting of way of delaying support until the Q-Pac users' association held October 1, when the agreement in Coventry. It follows rising between PPL and the South criticism from the associa-African company becomes tion of a delay in technical sup-

COMPUTER WEEKLY, May 25, 1978

EDITED BY PETER HEWITT

Members of the association However it emerged that Ofelt that PPL had outstripped its Pac Services is not a new com sales in the UK so far that its pany but was in fact originally technical support team could no set-up in 1970/1 when Q-Pac longer keep up with queries. was first marketed in the UK. Periods of two to three days Once PPL began marketing delay were reported. PPL said it operations, Q-Pac Services appreciated the delay was too remained an associated, but long and apologised for neglec-ting to inform customers of prodormant, company.

Roy Taylor, chairman of PPL was adamant that Q-Pac Services is not merely a ruse to delay correct support measures. "Steps are already in hand to improve the support and for example we have now a Q-Pacsupport desk which is always

8

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THE REPORT OF THE PROPERTY OF



Moves on Sigma —Level 66 migration Users told of revised

compiler-type approach. It

where Pobol has its intel-

Evans and Excalibur were un-

available for comment at the

time of going to press.

'Fully transportable' Hourds UK agents for Pascal compiler THE Stafford-based firm of The Stafford-bas is claim for language

purports to eliminate the need for conventional programming. has been launched in Melbourne, Australia. The language is not only claimed to be fully transportable between hardware but also capable of cutting programming time by up to 80%. its main designer is the managing director of Excalibur Management Consultants, Stuart Evans

It has taken over seven years to develop his Pobol, Welsh for 'people," and Evans claims to be two to three years in advance of competitors. Excalibur has held seminars and demonstrations in Melbourne to a number of computer hardware suppliers.

The launch is aimed at convincing a supplier the product works and selling exclusive world rights. If the language did perform as claimed, a supplier could reasonably expect a substantial number of orders.

Pobol has been designed as an easy to learn and use language using natural spoken-word constructs. Because it is the end-

the concept of portability is. Allied Business Systems markets its Simple language concept on its own hardware. Like Excalibur, ABS has no

grams should be cheap and easy

Programmerless languages

are not in themselves new, but

to maintain.

intention of revealing the inter-nal workings of Simple, but admits Simple is probably portable. The US-based Logical Machine Corporation markets a similar language/hardware package,

ABS says that while it has heard these claims of fully portable programmerless languages before, logically there is no rea-son why Evans should not have developed another Simple.

In stressing the need for large support team for true portability and the need for field experience, ABS said it has 50 Simple sales in the UK and

John Elsdon, software director at ABS, pointed out "for such

this project mot with limited success, partly because the

communications equipment was unable to accept terminals using

the special APL-language cha-

An APL interpreter was sub-

sequently implemented on the

The link between the London

CDC machines and the 370 ser-

vice was dropped during 1977.

and Paris nodes also enables

European users to access SIA's London CDC system.

SIA re-introduces its Paris service

WELL-KNOWN for its CDC (CW, May 13, 1976). However capability, SIA has reintroduced an IBM service, based on private 2,400 baud lines to a 5 Megabyte IBM 370/168 operated in Paris by the parent

SIA facilities, including a communications multiplexor and an RC 3600 RJE station, enable users to access the IBM system remotely in either imesharing or remote batch

SIA sales manager, Peter

in-house systems.

Cisi's 1BM network in 1976. ply back numbers going back to to add a capability for APL 1968.

Algorithm journal

magazine, costing £3 a year for ork from similar three issues. The magazine is published by the Royal Statistical Society, which can also sup-

Puzzler

Christian-Turk Circle, wherein However, being a Christian 15 persons of each religious perthat the C-T sequence round the , circle, at the outset, was such that all 15 Christians would be spared in the fetal count-round. Here is a mnemonic which

gives the correct Christian-Turk positioning — if only you can work out its secret "From numbers" sid and art, hever will fame depart."

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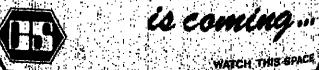
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Keen competition in the North East

tastars, held at the Nab Wood Sports Centre, Bingley, Yorks last week turned out a great

The nineteen men's teams, each of five members, braved the elements of the morning to entertain the spectators adventurous enough to join them in the open, and the more cautious who watched from the relative comfort of the marquee.

Competitors took part in five events: penalty kicking, putting the shot, projecting a frisbee, performing press-ups and stand-ups, and sprinting.

At around 2.00 pm, the finalists emerged as PMSL 1, Rowntree Mackintosh I, Rowntree Mackintosh 2, the 600 Group, Platt Saco Lowell, Boots, Reckitt & Coleman I and British Railways. The non-qualifiers took part in a men's plate com-

The ladies joined in the fun at about 2.15 pm, with seven teams participating. In Computastars the ladies' teams have three members and two reserves, if so

They took part in events including netball, throwing the cricket ball, sprinting and sack racing. The cricket ball throwing was great fun but pretty hazardous, as when Debbie Simpson, of Woolworth, using a curious under-arm technique somehow managed to throw the ball behind her, scattering the spectators. Anyway, everyone survived,

and at around 5.30 pm Wool-worth clinched the ladies team title, with the individual award going to Shella Watson of Midland Bank, Sheffield.

The men's competition went on and on into the evening, until just before 9.00 pm, when

Sponsors

The North-East heat of Computastars was sponsored by Pro-vident Management Services Ltd, the computer bureau based in Halifax, it was a greet success, thanks largely to the hard work put in by a number of the bureau's employees, Gordon Ceirns of John Goldsmith Computer Services, and several of Cairras (riends.
Anyone who whites to help in the organisation and running

of the other regional heats should contact Gordon Calms at John Goldsmith Computer Ser-

A GREY, ratiny morning gave way to a brighter afternoon as contest, with the individual title worth, Midland Bank Sheffield also going to their number one seed, Martin Rigby.

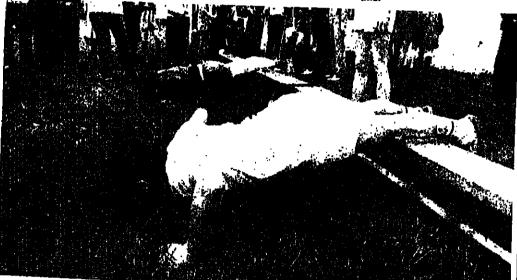
So, the qualifiers for the final tastars is a nationwide competi-

to be held in London sometime tion organised by John Goldsmith Services and supported by Computer Weekly, and is in-Mackintosh 1, runners-up Platt Saco Lowell, PMSL, and sporting ability of computer Midland Bank Head Office, as staff. Each men's team has five winners of the Plate competition. The qualifiers from the ladles team has three.

tended to test the all-round



"Catch me if you can." Martin Rigby of Rowntree Mackintosh 1 on his way to winning the 100-yard sprint and the men's individual



"The show must go on." Two feds defy the adverse conditions and impress the spectators with their strength and





PEOPLE

Board appointments at Racal Datacoms

Communications Group (CW, May 11) has made two more appoint ments to its board.

Barry Stuttard, already a director of Rucal-Milgo Limited since it was ormed in 1969 when he came from STC Data Systems, is now appointed technical director of the new company. Stuttard is a member of eral CCTTT study groups and is this year's chairman of the Data Systems Division of the Flectrical

Engineering Association.

Peter Hare moved from ICL in 1975 to be marketing manager of Racal-Milgo with particular respon-sibility for selection of products complying with CCITT require-ments. He is now appointed director of product strategy for the Racul Data Communications Group Data Communications Group.

Meanwhile at Racal-Milgo

Meanwhile at Racal-Milgo Limited, marketing director Ron Allatt also becomes deputy managing director. He has been a director of the company since joining in 1969 after 15 years with Solartron, where he moved from sales projects to control sales. sales engineer to general sales

manager.
Three others join him on the Racal-Milgo board. John Blackwell, ormerly product engineering manager, becomes engineering director eight years after joining the company as a product engineer. Operations manager Derek Fones

operations manager Derek Fones becomes operations director (es-ponsible for the company's manufacturing and distribution facility at Hook, Hampshire And Malcolm Hearn becomes sales director after about pages mate sales director after eight years with the company in various managerial sales positions.



frector of Kayser Bondor, has joined MSS as a marketing consult

Harry Hoyle, London-based acting manager of Quantum's European computer consultancy solvices, has been appointed manager. In the US. Daniel Lavage because Daniel Lavery becomes director of consulting services, while conlinuing as director of Quantum Science's office systems studies, and David Broceker joins as a senior consultant. Bruceker was formerly president of Computer Data Access

Martin Ginger has become product marketing manager at itel international Europe. Formerly he was a commercial analyst with IBM's mmercial analysis systems centre

Colin Bazendale, a sales execute with Control Dataset, has loke Nuchture as regional sales many for Northern England.

Inn Guthrie, Minster Automain has been promoted from the executive to London regional sta

lan Mackenzle has left Shing Computing Centre, where he was sonior systems analyst in the numerical control department of joined SIA's industrial system group as a senior NC consultant



Mike Harvey, president of Infest Butara joining infores, he was pe sident of the US Group of Us versity Computing Company

Stuart Bass has been promotels. Redllion Computers from territor manager for the Southern regions, senior territory manager for cents! acrounts, South, Simon Shaffering pointed as territory manager for the government branch, from CNE Chere he was a semor consultant

Fred Pritchard of Honeywell M viously Midfands branch markets manager, has been appoint manager of the Midlands brand.

Ron Goodman, sales execute has moved from Ragan Internation to Logabay

Roger Smith, general manager MPLC originates, has been appointed Kingsley Stock Joins MPL avama ketting consultant, from Hoskys Systems where he was a system

Glenrothes development

EDINBURGH systems consults Robert Watt has been appointed deputy chairman of the developmen Composition of Glenrothes in File. The has his new consultancy but ness and is a Fellow of the BCS having served on its council 8th Sciatish representative Last years was awarded the Queen's silve Jubiles Medal for his service.

● DIARY Is on page 12

Liveware File by Don



Skills of

operators untapped

DP MANAGERS often fail to make the best use of the skills of their operators. This leads to discontent and unrest among the staff, who feel that they have no real career path and that their potential is not appreciated and therefore wasted.

It is time for operations staff to take the initiative and to make practical proposals on the organisation of the DP function,



French . . . "Too many operators are just interested in getting home

the development of technical skills and training, in order to raise the status of the operation

These were the main points to emerge at a meeting of the CenNone of the programming staff

Training essentials ACCORDING to Dave Charles 4) He should monitor the system these are the essentials of the operator's job, and should be at the basis of any training course:

1) The operator must know the capabilities of the equipment.

2) He must know how to initialise, or IPL the system and how performance and be aware of any hardware or software errors which occur.
5) He must be fully acquanited

with all housekeeping procedures.

6) He must be fully conversant or IPL the system, and how to with the operator commands and messages, including the job

TERMINALS
TO Labs new range of British VDUs
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Prices from

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Plices from £946

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set the system parameters.) He must know the work mix the machine can handle without decontrol language, in order to grading the response time or the throughput of the system. obtain the optin and throughput.

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Processing Management Association last week, at which operations staff had the opportunity to air their views. Ron Linton, computer opera-

tral London branch of the Data

ions controller at Manchester Polytechnic; George Stevenson. contract operator; and Mike Rees and Dave Charles of Opcomm were the four operations staff who addressed the meeting.

All were clearly concerned a about the manner in which DP managers fail to recognise, or just ignore, the ability and skills that exist within operations. In this context Dave Charles said, 'The industry makes little or no attempt to use the latent skill and ability-inside the computer

In the same vein, Mike Rees pointed out that, "It is almost as career progression for operaif the DP manager is frightened of sceking opinions from the untapped knowledge and experience of his team of operacern - that in the great

Ron Linton said that "operators are rarely given the opportunity to demonstrate their capabilities," but named a site vhere the situation is different, with impressive results:

are left to their own devices to acquire the skills of the Job -"At Ferodo, the operators are the lucky ones getting someone entirely responsible for the George 2 operating system, within the department to help



know - or want to know -

anything about the operating

the way to make use of the

resources within operations is to

provide a formalised training

He said, "From my conversa-

tions with other operators from

found one area of common con-

majority of cases the operators

receive little or no formalised

He added that most operators

n and around Coventry I have

scheme, and a clear route of

tions staff

According to Dave Charles.

criticisms answered

DP MANAGERS often make remarks like these about opera-

rs at the conference — left to right, Ron Linton, Dave Charles, Mike Rees, Colin Smith, chair

tors, said Ron Linton:

1) "Operators are the least important members of the DP department — programming and systems are the real productive element."
"Operators have an easy life."

"Operators shouldn't try to sort out problems with jobs because they don't understand 4) "Operators can't be worth

much, otherwise they would be paid more."

them while the less fortunate are left to "muddle through by Other speakers and members

of the audience made comments about career progression. Jack French, who is operations manager at the Bishopsgate site of the Bank of Belgium said, "There are many operators who are not sufficiently interested to become involved in technical matters. Too many are just int-

erested in getting home early." But French added that there are many areas in which operations and programming overlap and that the operators with suf ficient interest and motivation should look to move out of operations and into technical

George Stevenson agreed about the overlap, but said that DP management should accept a broader definition of operations rather than move staff from the Ress. . . "It is almost as if the DP department. He added that manager is frightened of seeking operators and programmers opinions from . . his team of should be encouraged to work operators." 5) "Operators have no interest in is ringing for attention and the console is chattering for their work." Here are Ron's reactions to operator action?" "Operators exist not just to run jobs but to produce results

— they cannot achieve this
without thinking."

 Today many of you are run-ning a routine payroll. Which would have the most effect on the production of that payroll - a walk-out by your pro-grammers, or a walk-out by

ur operators?") "How many managerial staff are capable of running around a machine room, loading tapes whilst the printer is pouring paper over the floor, a modem

much to learn from each other.

gramming - with operations

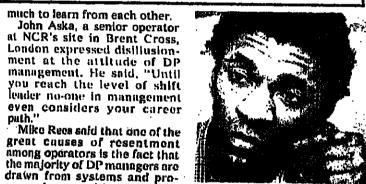
being almost totally overlooked.

who do you want - Paul McCartnery or a nurse?"

"How can operators be ex-pected to be interested when their employers take the above

Pop singers regularly make

£1,000 per week, nurses about £50. If you have a broken log.



Contract staff

RELATING some of his ex- go to a site their experience is often periences as a contract, operator, wasted by the "short-sightedness George Stevenson pointed out of the DP manager who puts us on some of the difficulties he faces peripheral work almost moving from one site to another.

Of DP managers he said, "If DP managers had their installations organised and running in the correct manner contract staff, like myself, would not be necessary."

He added that when contractors store: He added that when contractors

HINT OF THE WEEK Use of the SYSLOG

THIS week's hint relates to the use The SYSLOG is written to the of the SYSLOG in the OS and OS/ output queue by use of the following OS command;

VSI environments.

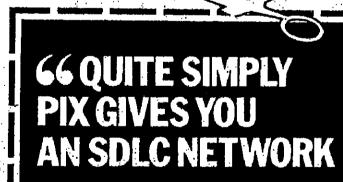
If the system is particularly busy, such as when a lot of machine time is allocated to testing work, the job control section may be inundated with inquiries as to the whoreshouts of users jobs.

In these circumstances, as an aid

to the person lisising with the users, least one of the printers gives, it is a good idea to get the system log priority to that class. In this way it printed every hour so to provide a will not be left walting on the output recent record of the throughput of queue for an excessive length of the system.

WOUTPUT CLASS

The operator should ensure that the SYSLOG data is written to an output class which is not used by other work at the installation and that at queue for an excessive length o



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Rapid

Recall to

A WARNING has been given in the US about the existence of "Incompatibilities" in microprocessors and memory com- written to run on the Intel 8080 ponents being offered by companies which claim to be second the other versions.

Beser, a computer systems engineer for General Electric's Space Division, during a presentation at a microprocessor applications conference in New

"There is a difference between a second source and a second source licence," he said. In particular, he referred to the 8080 series of microprocessors now being offered by a wide range of vendors. "Some of these have produced a performance copy rather than an actual hardware some devices have differences in

may not always run on some of 'Such second source Incom-

Iticame from Nicholas D. patibilities were also to be found in other components, such as memories," he said. As an example, he compared the 2716, 16K EPROM from Intel, with the 2716 from Texas Instruments. While the Intel part requires a single +5 volt power supply, the Ti device needs both ±5 volts and +12 volts to be operational.

Beser pointed out that, while each part had its merits, a design with one of them was a total design commitment. "If you go to your purchasing manager and ask for a 2716, you had better tell copy," he said, pointing out that him which one, or you may wind up with problems," he said.

the Lear Siegler dumb terminal, its smarter brothers

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range of peripherals!

102 games to play

ONE hundred and two classic computer games can be found in a new book from the publishers of the US magazine, Creative

Computing, Edited by David H. Ahl, the Edited by David H. Ahl, the 200 page Basic Computer Games contains all the popular games, including super star trek, football, blackjack, lunar lander, tic-tec-toe and horse-race. They are all written in standard microcomputer Basic.

race. They are all written in standard microcomputer Basic.
The book is being imported into the UK by LP Enterprises, and will cost £5.50. LP Enterprises is also offering subscriptions to the Creative Computing magazine, at £8.50 per year.

processors. To be run in association with Motorola Semiconductors, the course will have two main objectives: to highlight the effective use of microprocessors,

Course for

managers

TWO-DAY course,

becoming involved with micro-

Edited by Martin Banks

It will take place at Ascot on October 5-6. Details: Bleasdale, 32 Eastways, Morden, Surrey.

and to give an understanding of

how to manage a micro-based

BY lopping £1,000 off the price of the 4051 graphics terminal, Tektronix has pushed the system into the top end of the main-stream price bracket for personai computers at £3.821.

It is based on the Motorola 6800 micro, and is available with between 8 and 32K bytes of memory, together with 300K byte tape cartridges. The soft-

with the operating system, is held in 32K bytes of ROM. It uses the IEEE standard 488-1975 bus interface for connec-

tion to peripheral systems. One of its most important features, according to Tektronix, is the in-built graphics capability of a system designed initially for

When it comes to accuracy

20), but he is dealing only with job-oriented datavet routines can be included in the program.

style errors.

It is now normal for interactive VDUs to indicate the operative text style by means of status lines on the screen when the operator can check that he is entering text in the correct type size, measure and format, and many systems will show the text on the screen in justified lines. The next stage is the display make up terminals with interactive control of displayed ad-

vertisement composition. Exmout A great deal of programming Devon.

character-set. Although effe have been made, and are or tinuing, to provide a standa code representation of all " characters available to printer, the result is most like to prove too cumbersome handle when only a small fit

compared with the printer

tion of all the available specific characters are needed for ag

ARTHUR H. PHILLIP

JUNE 1
Software engineering seminars — the
Olympus program documentation system. K. V. Roberts. Oxford University.
Nucleur Physics Lecture Theatre, Rebig
Road, Oxford, 18-30.

JUNE 5. M. Online searching in MAFF. S. M. Johnston. UK User Group for Online information Systems. Asimal Breeding Research Organization, West Mains Road, Edinburgh, 14.00.

tional Computing Conference; omputer Society, Application

Alke Cooley BC3 1978 Lecture idea School of Economics

New microprocessors and support, Zilog, BCS Micro Group, Polylechnic of Central London WI. 14.00.
Software engineering seminevalutionary approach to requirements specification. R Chiefo University Nuclear Plurs Theatre, Keble Road, Out.

Cogar to task

"Managing with Micros" is being planned by Bleasdale George Cogar, overflowing with horse-feathers. "Robotics," we told, "as well as being fashionable is an oft-used ruse for the Computer Systems for company directors and managers who are fund-raisers in Academia worldwide." (Cogarview, April 13)

Michie takes

on robotics

The pioneering work on computer-controlled robots was conducted in Academia, by aboratories directed at MIT by Minsky, at Stanford by McCarthy, at SRI by Rosen and Raphael, and in Edinburgh by

Far from these studies being wily fund-raising ploys, robot work in all these places had mainly to be moonlighted. In the United Kingdom the topic became so unfashionable that in 1973 the financial rug was pulled from under, and the wave of official robot-zapping spread for a short time even to the Ameri-

In the aftermath, the public spending by the UK on academic robotics now runs at not more than £50,000 a year for all the projects in Britain combined! Against such a background any academic who uses robotics as a fund-raising ruse is scarcely to the can be consulted. In addition the papers presented last most the papers presented last most the papers. would appear to be more appro-

over numerous small facts.
Cogarview performs a drunassisted manufacture divise kard's walk through a china shop. Thus, Berkelev's robot is DONALD MICE not "walking," the Unimate Machine Intelligence Reseat

robot was developed by Unima-tion Corp, not Stanford. Its main Edinburgh University.

IDDIVIDES

employment is not "lifting

weights" but spot-welding

Artificial intelligence is not to

confused with "brain model

Rather than attempting to

collect all the little piece at ply the glue-pot, I would us Cogar, and all interest readers, to seek informatic

from the British Robot Asson

tion. They should write to he

fessor Wilfred Heginbotham, the Department of Producti

Engineering, University of Na

On immediate aspects to

government industrial polls

the recent report of the Depart

small batch production comp

the papers presented last more

Laboratory's colloquium

robotics may be requested to

Input errors—first identify your text

WOULD agree with all that effort has been spent in des-Tom Gilb says about input error ting input errors in tabul correction (Mythodology, April composition, I would sugge however, that it is dangerow structured text where numeric and alphabetic fields can be to detect "Tom Gylb" or "Gbb". identified separately and many

My concern has been with the input of complex text strings for computer typesetting where it is impossible to write datavet routines with general application to the text strings, but it is possible to indicate some

it's not from write error correction route and correct them; it might m correct "Glib as a writer," Inforex, can't know everything" when the person referred to w well... someone entirely different Many errors occur computer-aided compos because of the limitation of the internal code of the company

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UK minimakers take 37% of market

tems house CAP-CPP a Micro-Cobol "double," the Post Office

is now actively considering it as

one of the two potential

standard languages for its Pres-tel viewdata service. This follows the awarding of

grants representing a quarter of the £2 million development costs from the National Research and

Development Corp and the

The Post Office has been

aware for some time that the 960

character frame format of view-

data was suitable as a storage

medium for applications pro-

ten in any language in theory, though standardisation would

be the ideal so that they could run on a variety of machines.

It is now looking at MicroCo-bol, for which CAP Microsoft

claims a high degree of por-

tability between a growing

range of microcomputers, and Dartmouth Basic, the daddy of the many Basics now being used

on microcomputers,

A series of trials are being

DESIGNED for use in an office

matrix printers introduced by

Date Recording Equipment.

Called the 6325 and 6225, they

operate at up to 600 baud and are

both available in receive only

and keyboard send/receive ver-

sions with V24 and 20mA inter-

faces. Another common feature is incremental printing if data is being entered from the key-

The 6325 is a 132-column unit,

than with one, claims the author of a booklet published by the National Foundation for

Educational Research in Upton Park, Slough, The author, F. B. Salt, who is headmasten of a

school in North Humberside.

nodels," which are arithmetical

argues in favour of "timetabling

handling paper up to 155/16 inch teletype

re-read at every cycle.

Data Recording Equipment is the recently formed subsidiary of the Data Recording Instrument Co.

SCHOOL timetable planning and diagrammatic representacan be done better and more tions of the way different timet-cheaply without a computer able ivariations can be

Timetable problems

environment are two terminal

The programs could be writ-

grams, as well as information.

National Computing Centre.

dom Installed Computers makes fascinating reading. It is Pedder's fifth annual census of the industry and goes up to December 1977

system, or, if the machine is obsolete, at the last sale price before the model was withdrawn. In contrast, IDC depreciates all sys-

tem values according to age.
Now that ICL has started delivering 2900s in quantity, its share of the market has fallen from 37.7 per cent for 1976 to 35.4 per cent, with IBM moving up from 37.1 per cent to 39.4 per cent. However, Pedder notes that several high-value 2900s have been deliv-

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found the

most cost

key-to-disc

the world's

leading

system from

supplier, and

effective

If you think

in the mainframe market — and for Ped-der, ICL 2904 and IBM System 3/10 count

lines, but the company is now shipping ket. World No 3 Data General comes in at several 86800s and "800" series mid-range fifth place with 6.1 per cent, behind Honeyscement machines, so it can be expected to advance further in the current year.

Old machines figure surprisingly strongly. Technology comes next with 5.3 per cent, there are apparently several old Ferranti machines including 16 Poseidons, three Hermes and one Apollo still running. Honey-well's base is still full of pre-series 60 Univac-Varian 1.9 per cent, Texas instru-

recent privals on the UK market like Prime, Harris and IBM with Series 1 have opened up

the industry and goes up to December 1977.

Among the notable figures are the 37 per cent of the market allocated to UK minimakers.

An important point to remember with the figures is that all installed systems are valued by Pedder at the current selling price of the system, or, if the markine is obsolete, at the last sale price before the model was with
def, ICL 2904 and IBM System 3/10 count recent and No. 3 with 8.9 per cent at 18 M with Series 1 have opened up the business and ofter DEC, only two other suppliers have more than 10 per cent of the market. Surprisingly, both are British.

Univac but by Burroughs with 8.4 per cent, CDC 1.8 per cent, field with 28.3 per cent, NCR 1.4 per cent and DEC 1.1 per cent.

Burroughs' strength lies in the B1700 at 10.8 per cent, and Ferranti, whose Argus machines are the recent are suppliers have more than 10 per cent of the market. Surprisingly, both are British.

DEC leads the field with 28.3 per cent, then comes GEC Computers with 17 per cent.

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Burroughs are cent of the market. Surprisingly and the business and ofter DEC, only two other applies the market. Surprisingly and the business and ofter DEC conty the business and ofter DEC. Only two other applies the business and ofter DEC conty the business and ofter DEC conty the business and ofter DEC conty the

well, 8.6 per cent.
Another British Company, Computer
Technology comes next with 5.3 per cent,
General Automation has 4.5 per cent,

CAP on brink of

MicroCobol 'double'

early next year to evaluate the practical problems of transmit-

ting programs on viewdata. These will determine whether

programs can be transmitted in

the 960 character frame format,

or as smaller blocks with more

CAP however is confident en-

ough of MicroCobol working on the viewdata service, that it is

planning to organise a do-monstration for the Post Office

this July, according to Ted Sed-

Successful completion of

these trials will no doubt push

the Post Office further down one

of its recent paths of thought -

that of allowing program providers to join the information

providers on the viewdata net

This is a market that CAP is

well aware of, for company

chairman, Alex d'Agapeyofi

has indicated that it is currently

working on methods of making

programs on the viewdata net-

work "decay." This would stop

paper rolls with one or two

DRE has also introduced a

printer for small to medium

sized computer systems. Called the 6320A, it runs at 140 chps

and is an updated version of DRE's existing 6320. An interes-ting feature of the 6320A is a

vertical format unit that can be

from a paper tape loop so that the loop does not need to be

organised.
Sait points out that in a school of 300 publis "the master time-tabler has to make 12,000 deci-

sions, all of them right." How-ever, he says computer timeta-bling is still far from satisfactory.

in the percentage of periods successfully scheduled.

loaded with format parameters

error correction facilities.

1.1 per cent, and Digico 1.0 per cent. Altogether, UK minimpkers as defined by Pedder have a susprisingly high 37 per cent

of the total market, In the small business systems market, basically machines supporting terminals one costing £20,000 to £70,000, the 2903

makes ICL the runaway winner.
ICL's 29.8 per cent by value (including System Ten) is almost exactly three times the share of the next contentier, Burroughs, with

9.9 per cent.
Fifth Annual Census of United Kingdom Instal led Computers At 31 December 1977. Price 6440 complete or £110 for each section. Available from Pedder Associates Ltd. 51 Port-

The financial support for

CAP's MicroCobol is made up of

amount vet again before deve-

run on four different micros, In-

3800 and the Zilog Z80, plu

IBM's Series I and Digital

Equipment's PDP-11. It will be

in June, being run on a new

Mostek microcomputer system,

on show at the NCC in Anaheim

tel's 8080 and 8085, Motorola's

MicroCobol can aiready be

opment is complete.

the AID-80F.

LSI-11/2.
One of the main reasons for the move is that DEC has been confronted with the same problems as those faced by component manufacturers before them (and which have led to the rapid growth in the business for component distributors). These problems revolve

TO achieve greater penetration

into the low volume end of the

microcomputer board market

way from its normal marketing

philosophy and appointed Rapid Recall, a specialist microproces-

sor distribution house, as a

franchised distributor for the

around the sheer cost of processing the volume of small orders being received. Rapid Recall already handles

Intel and Intersil microprocessor components and board systems, and had a turnover last year of £2.5 million. It has taken on-board an in-

itial stocking order of LSI-11/2 valued at £100,000.

£350,000 from the NRDC, plus £175,000 from the NCCadministered Software Products Laker opts for Scheme of the Department of Industry. CAP itself is putting an **ICL** in New York equal amount into the project and has plans to spend an equal

LOW-COST air travel pioncer Freddie Laker is staying with ICL for his computer requirements in the US. Laker Airways aiready runs a 2903 at Gatwick and has just ordered an ICL System Ten 220 for its New York Rego Park Travel Centre. The machine, costing \$135,000, wil support terminals at Kennedy and Los Angeles Internations airports for installation in June

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COMPUTER WEEKLY, May 25, 1978

Minimakers were out in force at Compec Europe, and in this second look at the equipment on show, TIM PALMER examines the latest offerings from several of the leading companies.

Showcase for minimakers

European minicomputer companies, and this year's event, held in Brussels earlier this month, proved no exception. Digital Equipment showed the PDP-11/60, Hewlett-Packard stressed the strengths of its new fast 1000 series processors, and Texas Instruments promoted the new DS-980 package for the OEM systems builder.

stringent military specifications.

redesigned the Modcomp IV 32-

length, offering 8, 16, 32, 48 or 64-bit working, and Modcomp

offers a complete instruction set

for each word-length. Other

features include one or two

dual input-output processors

Modcomp has completely

Modeomp put the Classic 7860 above ambient. As a result the on show, and even a brief Classic has already passed examination of the machine shows that it has much more to offer than a restyled cabinet with bold orange and yellow bit processor using that the tringer wild be the tringer will be the tringer with the tringer will be tringer to the trin

The use of high density chips hot only cuts the cost of production but also improves both AMD 2901 bit-slice chip. The Classic features variable wordingth, offering 8, 16, 32, 48 or processing and input-output speeds. However, Mudcomp remains committed to its traditional use of wirewrapped joints and plug-in semiconductor components. Cooling and a floating-point processor, requirements have been much

Classic is fully software compatible with the earlier Mod-

At the top end of the scientific market, Norsk Data is the leading European minicomputer company by virtue of its for-midable Sintran III operating system. The company suffered somewhat by having a stand bare of equipment, but representatives were on hand to promote the merits of the new Nord TPS transaction processing system, which integrates the Sintran operating system, the Sibas database management

The Nord range of minicomouters covers the DEC PDP-11 e from the 11/34, through the 11/70 and the VAX-11/780 to the DECsystem-2050. At the top end the increased performance is achieved by using the Nord-50

32-bit back-end processor. The Norwegian company has sent, at the University of Liege, where it is used to control a cyclotron, and it will open a Brussels office later this year New markets sought by the company include distributed database city administration systems and advanced banking Minicomputer highlight of the show was the new Medcamp and vellow stripes, which attracted lerable attention from the New from General Automa-

tion are a doubling of the memory capacity on the 16/220 microcomputer to 64K words. making Cobol compilations a practical proposition for the first time, and the addition of a MOS memory option on the 167-140. which thus becomes the 16/460.

British sensibilities persuaded Harris to drop the name Slash for its line of 24-bit processors. The current Harris processor is now simply the Model 6, and forms the basis of the System 100 family, all of which run under the comprehensive Vul can operating system. Vulcan batch streams, interactive time-sharing and multiple remote job entry to different mainframes, and also allows gight different language compilers to be used simultaneously.

Those available include Cobol, Fortran, RPG II, Basic, Snobol, Forgo, which is a diagnostic Fortran, and APL, which will be announced formally next

The difference between the three models, the 115, 125 and

Traditionally a scientific and engineering machine, the Harris system has made an almost clean sweep of engineering companies in Holland, where only one of the big companies bucked the trend and went to another supplier. Options for this market include a doubleprecision back-end floating point processor, and the Harris machine competes with the DEC PDP-11/70, the VAX and the

the biggest Dutch tour operator.

The Compec demonstration showed simultaneous Cobol

tion of a Total database.

Perkin-Elmer Data Systems has turned to the AMD 2901 chip for the low-cost Interdata 5/18 mini, and is going hard after the IBM market.

It claims 90% software compatibility with IBM 370 on its 32-bit machines, and reports that OEM customers in the US are adding mircocode to the Interdata 7/32 and 8/32 to make them 100% compatible with IBM.

IBM.

SEMS' Solar line is much stronger in Belgium than the Mitra line, for historical reasons, so the French minimaker concentrated on the Solar 18/40 mint, running the Mulex multipransactional exchange operating system, one of seven offered on the Solar 16 line.

The Solar machine offers up to be beganished machines of main membry, and multiprocessor systems up it four CPUs are supported.

Computer scientist Professor Ewan Page has reached one of the top rungs of the academic ladder with his appointment

FEW institutions in Britain are more surrounded by tradition than the universities. Caps and gowns, the rituals of centuries, and the ghosts of William of Wykenham and Lady Margaret Beaufort can easily make someone from such a brash. upstart discipline as computing

feel totally out of place. So it is a notable moment in the development of computing as an academic subject when a computer scientist first reaches the topmost rung of the academic adder, as Professor Ewan Page has done in being appointed vice-chancellor of Reading Uni-

If computer science is now firmly established as a respectable discipline it is due in no small part to the efforts of Professor Page, who for the past 22 years has been developing the computing at what used to be King's College of the University of Durham, and is now Newcastle University.

Starting as a lecturer in statistics, he was instrumental in starting up both the computing service and the academic department at Newcastle, which

Indeed, he was one of the pioneers of British university computing in both these res-

Originally a mathematician, Professor Page's first brush with computers came at the statistics laboratory at Cambridge, where there was an Edsac 1. He took his bachelor's degree and doctorate at Cambridge, and then moved North to Durham, thence to Newcastle, where he has been

The first computer at New-957. This was one of the first

as Vice-Chancellor of Reading University. Here RORY JOHNSTON assesses the role of Professor Page - "a man

with a relaxed manner and a cherubic grin" - in firmly establishing computer science as a respectable discipline.

of the academic ladder

bought by universities, rather sealing wax." It was eventually

> Professor Page was determined from the start not to separate the computing service for the university and the teaching department, as is done at many universities. He regards computing as being part way between a pure and an applied science, with his own personal inclination lying in the middle of these two; and he felt it was important for the service people to remain close to the consumer

The fight to establish com-

intellectual discipline and not formation retrieval provided just a craft has been one of the the first access in this county to rincipal concerns of Professor Medlars, the American medical Page's career. From the start database this was helped by Computer More recently, Professor Science being set up as a de-Brian Randell's project on fault-tolerant software has received partment on its own of Durham the British Computer Society's award for technical achieve-University, and not a depart-

> Work is also being done on programming methodology and computer-aided design of software, and a joint commercial venture has been set up with CAP to produce software for microprocessors, and possibly even design new micros.

success can be seen not only in the computer science degree As for establishing the status courses, but in the subjects of computing with the public at taught for other departments. large, Ewan Page declares him-Computing is now taught in self not to be a campaigner. He is every faculty in the university concerned, however, with the except Law. All engineers and issue of professionalism. He feels that many people drifted into most scientists now study it, as computing without formal well as many students in the arts training and lacking a broad enough base of knowledge to adept to changing technology. A high degree of flexibility of

puting, he feels, and a programmer needs to be trained to tackle a wide range of problems, and to be aware of the many different solutions there may be to the tasks facing him. This is a natural enough attitude for a man who has spent his life teaching computing.

A man with a relaxed nianner and a cherubic grin, Professor Page lets it be known that one of the proud moments for him was when a Newcastle paper head-lined the story "Northern academic wins new post." To be accepted by the Geordies as a local is quite an achievement even after 22 years.

The switch out of computing to dealing with the weighty pro blems of university administra tion will not be too much of a shock: he has been pro-vicechancellor at Newcastle for the past six years.

He hopes, he says with a smile to be invited to give some lec-

Good connections THE Cross-City Line in

NEWS IN BRIEF

Birmingham, a new rail-link running from Longbridge in the South-West to Four Oaks in the North-East, is making use of advanced technology in its signalling and communications.

The main signal box at Salt-ley, and three fring boxes have been equipped with 4M control systems from Vaughan Systems and Programming, of Ware. The system is based on modules using the TMS9900 series 16-bit microprocessors from Texas In-

Increased profit

FOR the six month period to the end of January, Kalamazoo reports a gross profit of £1.27 million, an increase of 11 per cent over the same period last year, on sales of £9.9 million which were 21 per cent higher than last year. Its computer services division accounted for 25 per cent of the profits.

Range extended

CLUSTERED word processing systems have been added to Wordplex's range of display WPs. Called the Wordplex 1.2 and Wordplex 1.3, these systems have two and three typing sta-tions respectively, and one printer shared between the typ-

Fiexel order

LARGE numbers of controllers and indicators from its Flexel range have been ordered fron Kent Instruments, a member of the George Kent Group, by Foster Wheeler, the main cor tractors for an extension to the Lindsey Oil Refinery, near

Computerman who reached the top

batch of computers actually than built out of "string and sold to Parsons, the engineering firm, and replaced by a KDF9 in 1963. Newcastle is now firmly established as an IBM user, with a 370/168 and a 360/67 - and a sizeable reputation throughout the UK as a source of innovation, particularly in online

stitute a good postgraduate de-partment, by manipulating the computer curriculum around those of the more established subjects. of the product. The crossinfluence between the two

stimulus for both.

groups, he feels, is a good

and accounting Newcastle has made a name for itself in several areas of

ment of King's College; but it

was still a long struggle to

attruct able students and in-

A measure of Professor Page's

We admit it. Weunderestimated our modems.

The serious of the first of the

In the past, we argued you needed an exchange line because it made it much easier to trace faults if your modem let you down.

Now, you strenuously disagreed with us over this. "Your modems don't go wrong," you told us.
"That spare line isn't necessary and costs us money." We went away and looked at the latest facts. And there's no doubt you're right. Our 23,000

private circuit modems are remarkably reliable.

So, to prove we're here to help you, we're no longer insisting you have that extra line after July 1st.

To cancel it, call your local Telephone Sales Office and ask for Special Services.

On the other hand, you may want to keep it for emergencies, just in case your private circuit should fail.

135, lies in the number of users supported. The 125 is the work horse of the range, and supports up to 30; the 115 takes eight and he 135 up to 120. Maximum memory capacity is 25dK words, and the 125 offers one Megaword of virtual storage, and the 135 four Megawords.

Like most of the minimakers.
Harris is moving into the contmercial market, and the installed a system with NRV Holidays,
the biggest Durch tour operator.

ocessing, with a Fortran stress analysis package and interroga-tion of a Total database.

tor small countries SMALL computers for small

French aim

for £150

telecopier

IN an effort to promote the widespread use of facsinile a

an alternative to mall, the

French government is trying to encourage the development of a very low cost telecopier forms.

The price the governmently

n mind is about 1,500 France (£150); but Secre, the only

rench manufacturer of a

automatic telecopier, is sceptial of the feasibility of this.

As a first step to promotive

he switty to electronic mail n

French PTT has ordered 2,000 a

Secre's S 360 fax machinesforts

School for

scandal

THE proprietor of a competer training school in Detroit has been charged with defrauding the US government of months.

obtained as grants for need students. He has already lost

civil action brought by the

government to recover the

charges. Harry Borcherding, found

and owner of the Institute of Computer Technology, submit red 2,000 applications for

grants from recipients of wel-

training as key punch operator, computer operators, and pro-grammers. Under the Federal Government's Rosic Education

nol Opportunities Grant Pro-gramme set up in 1972. Borcherding was said to have

Borcherding was said to have received \$389,103 before aud-

tors moved in and charged the

many of the students new

attended cineage, and many a

the classes were never held

Small systems

nancy, and now faces chie

countries is the theme of the British Computer Society Specialist Group for Developing Countries meeting in June in lugu, recently returned from t tope of the Indian sub-continent and frank Land, a lecturer at the London School of Economist will speak at the meeting to be held at LSE on June 14, staring in

Another meeting on July 5 at the same time and venue will be devoted to SCAPA, a system designed for the application of computers to rural develop

Amdahl opens Irish plant

FORMAL opening of Amde in Dublin took place yesters Wednesday, at a ceremon of furned by Dr Gene Amdehl is plant is in the Dublin submod Glasnevin, but is to be transfered to another suburb, Swood

next year.
Amdahl now has two 470Vb installed in West Germany. It in Switzerland, two in North and one each in Italy and France. There are also Vish Denmark and the UK

Classic models

THE next models in Model THE next models in Modelly new Classic line are st of launch on July 18, says is sources. The new models in planned, one of which will off more power than the Class more power than the Class more power than the Class of the Model one of the State of the Model on the Class the Model on the Class the Model on the Class of the Model on the State of the Model on the State of the Model of the Model of the State of the Model of the Mode

Post Office Telecommunications Were have to help you The

and a complete rethink of reduced so that operating temperature never exceeds 5°C servicing facilities. Even so, the tion facilities into one package. Tomorrow you'll need an IBM bureau as advanced as ours is today. There's a stranger working with our dual IBM 370/158 computers. An Amdahl V5. Britain's first. One of the most powerful computers ever installed by a bureau. The name's unusual but the action's familiar. Because Datasolve's Amdahl V5 is totally IBM - compatible, it's more than doubled our capacity overnight. > It brings you reliability of a new order. It puts new power behind our range of on-line services such as Remote Job Entry, APL and TSO: Powerful and versatile enough today to we you the control and facts you'll need to manage your business Above all the new Amdahl V5 ensures that the service you've grown to expect from Datasolve in the past, you can expect, with interest, in Datasolve-tomorrow's solutions today. **BOC** Datasolve **BOC** Datasolve Limited 99 Staines Road West; Synbury-on-Tharnes, Middlesex Telephone: (76), 85366



DONALD MICHIE REPORTS ON THE ADVANCES IN COMPUTER CHESS EXHIBITION AND CONFERENCE

THERE was plenty to interest both chess and computer people at the two-day event, Advances in Computer Chess,

held at Edinburgh University.
One of the highlights was an exhibition match between Master, Britain's chess program, and Michael Clarke, irector of the conference.

The match, sponsored by The Times, was commented on by US National Master Danny Copec, Match director was International Master Harry

Clarke's playing strength lies in the expert range, one level down from National Master. My own conclusions from the match was that if Master is ever to cause anxious moments for a human chiese master (such as David Levy), then it will need extension of its present 5.2 its present 5-7 ply lookahead to a solid 9 ply.

But the program, developed by John Birmingham and Peter Kent, is a considerable technical achievement, especially considering that it has been done as a spare time pursuit

The program ran on the Atomic Energy Research Esta-blishment's IBM 370/168 at Harwell, and was accessed remotely from Edinburgh over

the public telephone system.

A different clash between human and machine expertise normal and machine expertise took place during the computer chess exhibition, sponsored by Computer Weekly. An exhibit mounted by Tim Niblett, of Edinburgh, provided an interactive terminal connected to Ken Theorem. nected to Ken Thompson's

database for the King-Rook-King-Knight ending. Niblett had implemented it on the Edinburgh Digital Equipment DECsystem 10 in such a way that an end-game expert could play across the board against a machinestored optimal strategy.

Until recently it was be-lieved that there is not a great leal to be known about the King-Rook-King-Knight ending and that what there. was could already be found in the books. Niblett and others have recently shown that these suppositions are spectacularly wide of the mark.

To drive the point home, such glants as Craig Pritchett, reigning champion of Scot-land and Britain's No.1 endgame expert, John Roycraft, were given positions of the King and Rook vs King and

Clash of human and machine expertise

night the public queued for a turn at a terminal as the paral-

Will there, I wonder, be

The conference, for which

triguing question in the air. Should there be a regular

world championship for com-puter assisted chess? Would

we then see works team:

formed of mixed industrial and

academic composition, as in the heroic era of motor racing?

those who can most creatively

match new designs and in-

strumentation to the human's

Time will tell.

special skills and thus poten-

Victory will go, as then, to

lel battles raged.

chess on viewdata?

Knight game, and invited to play the Rook side to victory tre's ICL 2970. Until late at against the database. The latter has some three million positions, with the Knight's side best defensive move entered against each. iBM had provided financial support, ended leaving an in-

Lured by intellectual curiosity rather than by the substantial money prizes offcred, the chess masters tried repeatedly to win. But the prizes remained unclaimed.

The next research task, on which several of the conference papers had a bearing, is the use of the computerderived knowledge to rewrite the text-books, so that chess masters of the future can stand on the shoulders of today's nan-machine skills.

Contributions by Michael Clarke and Don Beal of Queen Mary College, London, emphasised this same theme, ie the refinement of existing book theory in respect of clarity, accuracy and com-

Clarke's paper, and a paper from Max Bremer, of the Open University, showed that even so humble a problem as King and Pawn vs King offers rich material for computer-aided theory building.

On a different note, John Moussouris of Massachusetts Institute of Technology, and Oxford, and Kevin Coplan, with a home-built chess machine, gave glimpses of a highly topical question. How should we blend superpowerful, highly parallel, special peripherals into inte-grated man-machine problem

Another overseas contributor, Jacques Pitrat, of Paris University, revealed new details of his program for finding deep tactical combinations. Outclassing as it does Grand Master skill at this narrow task, the program is at the very least a coup de theatre.

But it is much more, for this performance has only been achieved (some say could only be achieved) through a structure of goal formation and reasoned planning which closely parallels the tactical thinking of the chass master. thinking of the chess master.

The man-machine which stole the show was Edinburgh Regional Computing Centre's display of its adaptation of the University's EMAS interactive software system for ICL's 2900

new range.

Three chess programs —
strong, weak and beginner —
were available, on seven ter-

grows rapidly every year, the subject of data encryption becomes more vital, but expertise in the subject is spread thinly and information hard to come

A concentrated 2½-day semi-nar in Barcelona from June 18-20 promises to make a major contribution to understanding of the problems and solutions pro-

Entitled Commercial Crypto-graphic Technology, it is being organised by Ketron Inc of Wayne, Pennsylvania. The seminar will present two

basic methods which result in

UDS-2000 processor

THE processor in the new Univac UDS-2000 key-to-floppy disc system is a powerful 16-bit the mini used in the Univac 3760 communications controller. The processor is built around the AMD 2901 4-bit bit-slice microprocessor chip.

Univac at present offers the system with one master and up to three slave terminals, each supporting two floppy-disc

AS the value of computer data strong cryptographic systems. It Kansas; and Larry Buchsbarg, who has been designing computer-based information will examine the US National Bureau of Standards' specification for a data encryption standard, discuss the use and systems for 15 years. The seminar costs \$450 for administration of cipher keys within an organisation, and address the issues of Crypto

Barcelona seminar offers major

contribution to data encryption

32K or 64K words of memory.

stand-alone floppy drive acces-

sible from all terminals, cha-

racter and line printers, card

reader, interpreting punch,

The power of the processor

suggests that the new system

will offer considerable growth

and nine-track tape unit.

potential in the future.

the Seminar costs \$450 for toition, plus \$45 for each organisation sending representative. The same seminar was held how York City from May 22 and will be held in Denver, Colonado from July 24-26. graphic key generation and The seminar will be led by David Freeman, of Ketron, who spoke at the Infotech seminar on IBM and the future, in London last March.

Further details can be had from Charlene Woolard, Keton Inc. 530 East Swedesford Road Lecturers will include Dr Carl Meyer, whose work contributed Wayne, Pennsylvania PA 1908, telephone 215-687-6300 preceded to the NBS standard; Dr Walter Sedelow, Professor of Computer by the international dialing code for the US (0101 in the UK)

Iransdata deal with Ultronic

drives. It is programmable in a subset of Cobol, and comes with LOOKING for a high reliability The UDS-2000 also supports a printer for its new Model 31 time-sharing terminal, terminal manufacturer Transdata bas turned to Ultronic Data Systems, a company in the Dowly group. The OEM agreement calls for Ultronic to supply a minimum of 100 Ricoh RP40 do uble high-speed printers our



Not with Alfaskop-the flexible data terminal system from Datasaab. Take the special anti-glare screen or the infinite variety of screen and keyboard positions. All designed to avoid operator

frames and you'll appreciate why there are already over 20,000 users. Consider its wide range of applications. Alfaskop can be used for stand alone operation or cluster data terminal

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meets your requirements-anything from 30 to 200 c.p.s. Light pens, identification devices-the Alfaskop system covers them all.

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Telephone 01-422 3442. Teles: 6814540	
DATASAAI	3
Part of Scannlinas to Secrement technical organisa	ilitiro.

Last Year, Computer Weekly and the NIGEL LAURIE of Communications Data Processing Management Association organised a workshop on improving DP/user communications (CW, December 8, 1977). At the same time a survey was conducted of DPMA members on this vital topic.

Audit, who developed and presented the workshop and designed the DPMA study, reports on the findings of the survey.

Later this year, Computer Weekly,

be a thorn in the flesh of DP managers, they offer enormous opportunities to the DPMA and Laurie once again will the DPM who can communicate well. How the DPM communicates

the view of many DPMs who took part in the survey of DPMA members on improving DP user communications. It reflects the dilemma facing today's DPM: should he run the DP shop or manage the relationships between DP and the rest of the

organisation? The mini-survey of what DP managers are really paid for showed how internal matters eat up the DPM's working day. Yet few would dissent from the claim of one that "the initiative and responsibility to establish and maintain effective communication rests with DP

Hard-pressed as they are DPMs do communicate and through many different channels. Direct personal contact proves most popular (only two DPMs work without it), with system documentation a close second and used by four out of five installations

The well-tried steering groups are used by just over half the respondents as, more surisingly, are induction presen-

Three ad hoc niethods follow in popularity: fault reporting systems (used by 47%), seminars/briefings (40%) and a

hot line for user problems (37%).
When one looks at the rated effectiveness of techniques, a different picture emerges. Rated most effective is one of the least used: the DP information officer who scored an average of 92%. for effectiveness. Direct persoal contact scored 86% and joint third place went to the hot line and the developing of users with specialist DP knowledge in their own departments (77%).

Two little-used approaches — assigning DP staff to user departments and the use of joint task forces - scored 75%. Systems documentation scored only 61%. Surveys of user understan-

"IT'S vital, but we just don't have the time or resources," was hard, scored highly for effechand, scored highly for effectiveness (75%).

> In any fast moving situation, less formal communication tends to play a key role. The survey confirmed this; documenting skills may be needed, but only 7% rate them most important for successful user relations. Over two-thirds stated interpersonal skills (eg

interviewing) contributed most DPMs were given four user relations problem areas and asked to assign absolute ratings of importance to each. Those offered were:

 Support for existing users (eg advice, education, documentation, etc)

 Management of change Employee education

naking all staff aware of the basics and potential of DP Management education getting across the need for an

integrated DP strategy All are outside the DP shop and some are not traditional concerns of DPMs. Yet all received high ratings and three

emerged as "vital." If relations and communicaexpect the DPM to hold the reins. In most cases he does so, but in nearly one-third of cases no single executive retained control. And only one in five DPMs has an overall communication plan. Not sur-prisingly, then, few DPMs are able to ensure the success of

their user relations on a regular DPMs were asked to describe the major obstacles to successful user communications. Answers varied widely but fell broadly into three groups; I Problems inside the DP depart-ment; 2 Problems of com-munication itself; 3 The

attitudes and outlook of users. The most common internal problem cited was sheer lack of

Successful user

relations

A practical workshop on improving com-

munications between the DP and user de-

Computer Weekly and the Data Processing Management

position intend to hold a workshop in the autumn, conducted

people with the right skills. As a esult, the communications job (eg writing a user guide) is not done well first time, so user queries return to plague busy DP

Sometimes the problem lies in communication itself. DP does not communicate in a vacuum. The user audience is exposed to the outside world. It can get its image of computing from sources outside the DPM's control, such as Tomorrow's World And the industry's "worship of jargon," in the eyes of some respondents, has done little to

elp. But it is user attitudes and outlooks which provoke most concern. At worst, DP staff and users live in two different worlds. At best they see the same things from different points of view. "Prejudice," "inertia" and "human nature" may appear to blame, but DPMs offd some deeper explanations

According to respondents findings three key symptoms of poor relations - and obstacles to

QUOTE

"In a large organisation the problem is ensuring that all levels of user from board to clerical and shop labour are appropriately informed - the variety of approaches is an obstacle to success." DPM, Worcester.

their development - are: resistance to change (and to "old tricks for new dogs" as one DPM put it), differing priorities or "lack of commitment") and lack of top management support. All make open communication hard to establish - and all make it very necessary.

Asked for their practical advice, the DPMs offered many comments. Some will meet special needs but others will ertainly apply to most installa-

Users welcome a choice of communication channels, They prefer access to formal and informal techniques, one-way and two-way methods and ones they can invoke when they wish as well as those initiated by DP, "Always provide a formal and questions and complaints and accept all gratefully was one DPM's way of putting it.

Formal channels are needed

but they are rarely enough.
They do not encourage helpful but low key user comments. A suggestion or complaint made in passing commits neither 'side and yet can alert DP to likely future troubles. A formal com-plaint, sent through the fault reporting system, is a different matter. It may be delayed until the problem reaches a more critical stage. In short, "too rigid channels of communication dis-courage individual initiative and ncourage users to live with

Users need to be told why communication is important. If they are not, the lack of feed-back may cause problems which

affect them later.

Users need named contacts and easy access. They should

be organising a workshop on suc-

although user relations might seem to

In this article Laurie explains why,

cessful user relations (see coupon).

commended "an open door policy for users. The personal standing or nage of the DPM counts for a

At the DP/User Communication workshop staged in London in December, delegates were asked: Which three activities (from a list) have taken most of your time during the past 12

have "a known person to whom

to turn for advice and help" advised one DPM, and another

on the

survey

The list included: liaison with ppliers, training and supportting current users and developing and selling a long-term strategy.

A clear "first" was personnel management of DP staff: nearly

70% voted it major timeconsuming work. Next came ensuring the reliability and availability of user systems. Third, but with only 28%, was creating a favourable climate for DP throughout the organisa-

Striking is the heavy emphasis on managing DP staff, Many DPMs clearly feel unable to delegate the work and thus free themselves to focus on building user goodwill. (In some installations, however, there is a clear

trend to appointing "internal" managers. They manage the DP department's operations while the DPM manages his department's external affairs).

In a changing field firm conclusions are out of place. The survey does, however, suggest the following:

DP staff problems may

always be with us, but tomor-row's key problems will lie out-side the DP shop. When it comes to change, support, employee ducation and management commitment the DPM's atten-

tion will be all important. The user manual is the Achilles Heel of many systems perhaps because writing skills are not rated by DPMs as important,

 User surveys can pay off.
 A "regular and informal preice" in all user departments is

 User communication needs to be managed. It is not a one-shot affair. And since users vary many different approaches will be needed to ensure success.

· Communication barriers may be widespread, but so are opportunities. Most DPMs have yet to exploit many of the

formal one.

informal communication

a two-prong approach to user communication. There is a formal channel - and an in-

Spokesmen from each council department sit on a high level does not reach official groups.

CASE 1—power of the user survey

The DPM of a small London installation takes "a business look" at his function. Every few months an analyst visits managers and users to find out what they use, "What is the service like?" and "Are you using all the listings?" are among the questions put. he practice started when the

DPM came to the job and found a hostile climate. He did the first survey himself to show his goodwill and intention to provide service. Results of the first survey? One

system was rewritten to meet user needs more closely. And three more were visibly improved, Now users offer suggestions to

DP, where before they com-

CASE2 involving the user

The new DPM of an old established London company makes his organisation safe for computing by involving users in development right from the start. Past changes had been introduced "top down". His approach starts with a question to users: "This is what we want to do - what do you think of it?". Then the plan is outlined as "our sys tem" and never "the system" The reasons for the system are given and the benefits to users providing input are made lear. Above all a group feeling is encouraged: when system is explained by DP for instance, company board members join the staff

The DPM sees himself as the "lightning conductor" --- a face and name at head office which everybody knows. In a firm where salesmen provide input from the field this focal point pays dividends.

Now future DP plans are accepted more readily. For before a system can go live, all staff understand it and why it is needed. Involving users has visibly shifted their attitudes.

CASE 3 managing the

A local government DPM takes

working party reporting direct to the chief executive. This meets the need for official channels in the council and gives every user an official say. It does not, how-ever, allow the DPM to keep his ear to the ground. To do so he makes a point of being seen in the staff canteen and letting people talk informally with him. Users who would nover approach him officially. through their representative are happy to made casually off limits. Much useful input is gained, often of a kind which

About the survey...

Association members installations employing more received a postal question—than 1,700 staff in departments ranging in size from the content of the content detail by telephone.

munication:

Which sechniques are used most — and which are rated most effective?

Which skills are midst.

Apar communication Approof bart

THE survey was carried out approaches have DPMs by Communication Audit in found most profitable? sesociation with the DPMA. Responses came from 43

detail by telephone. They service more than 1,500
The purpose of the survey directly interfacing users in was to establish some basic organisations ranging in size facts about DP/User com- from 50 to 35,000 staff

(average 2,503). Survey analysis was carried out by Abraham and Partners using facilities pro-vided by ERA Computer Ser-vices of Leatherhead, The important?

Which key areas have top help and services freely propriety?

Why are user relations are gratefully scknowledged, also all the DPMA members

minals connected to the cen-Computer Communications a new bi-monthly journal situations.

THE second issue of Computer Communications is now out, and it contains articles on Euronet, the Post Office, and packet switching and other aspects of network operation.

The bi-monthly international journal aims to provide in depth coverage of developments in techniques of developments in techniques and spreading the design and platfor of computer

ons systems. Feldman and Don . of the Post Office the lessons learned ing the Experimen-Switched Service expediations from and in 1868 in the

effect of the advent of X25, and the benefits of the experiment to future public data networks.

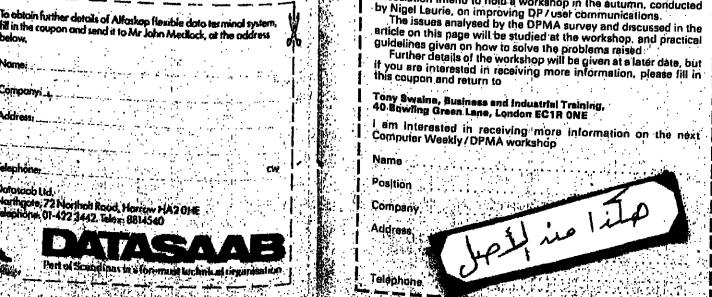
John Wong of Waterloo University, Canada uses a

numerical queueing network model to analyse the parformance of flow control techniques. He shows how degradation of total throughput under dertain loading conditions can be avoided.

The journal invites technical articles covering all aspects of the uses of computers and telecommunications technology Details from Carete Jones ARC Science and Technology Press, \$2 High Street, Guildford

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NORTHERN APPOINTMENTS WE



How to make the best use of our resources By Val Halliwell

Hull to Manchester over the motorways. Pennine Range which Traditionally, the North to invest enough in training.

seemed to welcome me as a of England grew up around long lost friend. After the the manufacturing indust
further aggravated by the producing some useful pro
further aggravated by the producing some useful pro
for computer work. This ties that on management pro
ganisations who are able gression. The ability to suc
cessfully manage and direct producing some useful pro
for computer work. This ties monotonous flatness of ries and, having been quick reluctance of many com-Holland, with all due res-pect to our Dutch friends, therefore offer skilled com-little or no experience. one suddenly becomes puter staff the whole specaware of what magnificent countryside and scenary the ranging from the pure dramatic increase in staff North of England has to scientific to sophisticated requirements, due mainly to offer; the rolling Cheshire production and inventory many companies embark-plains, the Bronte country control. many companies embark-ing on ambitious developof Yorkshire, the Lancashire and Derbyshire puter industry for nearly 10 grammes shelved during easily could we become particular holds good their departmental heads. Peak District and Dales in years, spent mostly on the the early 70's, problems in physically disabled. I feel we potential. Given formal thus creating a clearly deaddition to the many cultu-ral centres and University

AFTER spending some time world, the Arts and, in in the marketplace. It is working in Holland last general, facilities for a full clear that the present an excellent training school, staff is not an automatic tions to the system. your, what a wonderful family life. The area is also shortage of trained DP staff off site offering a structured solution. An alternative is Another area in cling it was to drive from exceptionally well served by results from the failure of comprehensive training internal recruitment. There development is going on is all to Manchester over the motorways.

DP departments in the past—scheme for, the whole of are many junior staff in or-that of management pro-

However, as the past 12 trum of applications months have seen a set up by the British Com- offering them responsible ing on ambitious develop- accident will only happen to turnover. Having been in the comment and expansion prothe other fellow, but how

The North of England not only offers breathtaking countryside comprising the Pennines, the Dales and the rolling Cheshire plains, but also excellent facilities for sports and general arts for leading a full life. The area is also well served by industry and so offers ample opportunities for skilled computer staff, writes Val Halliwell, managing consultant of Victoria Appointments. But there is a well-established

shortage of skilled professional personnel in the marketplace, comments the author, and goes on to give some valuable advice on how to tackle this problem. Being a member of the BCS Specialist Group for the physically disabled, Miss Halliwell wants the companies to particularly seek and train the staff among the disabled.



Recruiting additional new software and applicaputer Society for the work with real career pro-Physically Disabled. spects within the company, Physically Disabled. spects within the company, We tend to think that the it is possible to reduce staff

puter industry for nearly 10 grammes shelved during years, spent mostly on the early 70's, problems in recruitment side. I have recruiting qualified staff have encouraged a number seen it go full circle.

Seen it go full The Operations area in The quality of life in the Computer Weekly will test their own training proNorth of England is second tify, there is a wellto none, offering first class established shortage of skilsupport to the sporting led professional personnel woods Organisation in control of the skills we have the computer the computer to distribute the control of the computer that this is an technical expertise with worthwhile technical expertise with the computer the computer the computer the computer the computer that the computer the computer to aid the implementation of sent are in database and

Another area in which

grammers, another source in with the great advan- coming more of a science of professional competence tages for a company of de- than ever. There have been still to be recognised comes veloping its own stuff. By great strides in this area from the Specialist Groups utilising existing stuff, with data processing with data processing managers recognising that a large part of their job is the direction in which they guide the careers of their staff, as well as the delegation of responsibility to

ities, it is often useful to thereby jeopardising their

consultancies offer a carea guidance service and by being in constant touch with their clients are wel-

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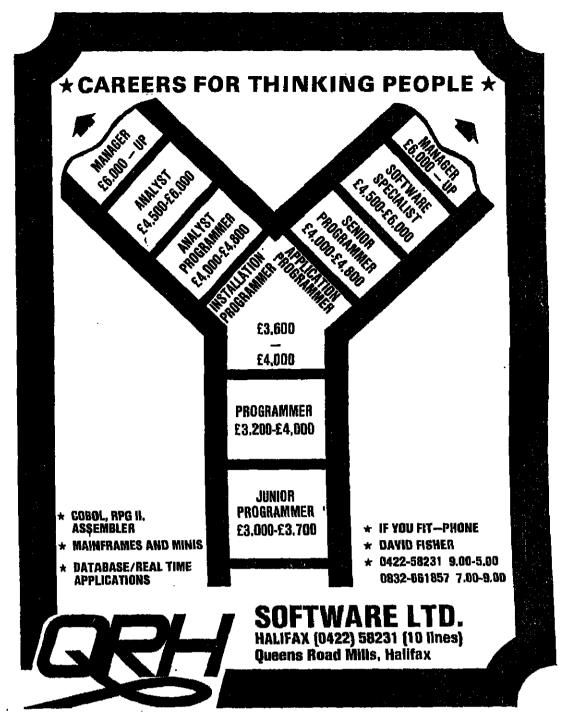
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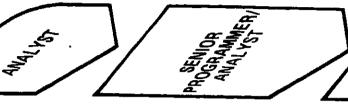
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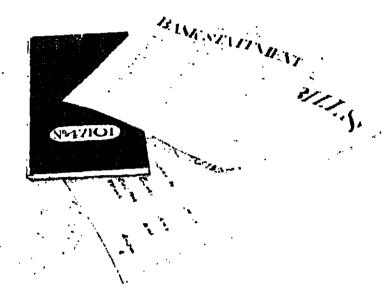
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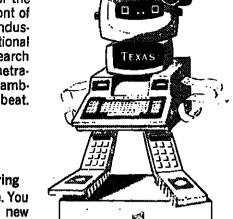
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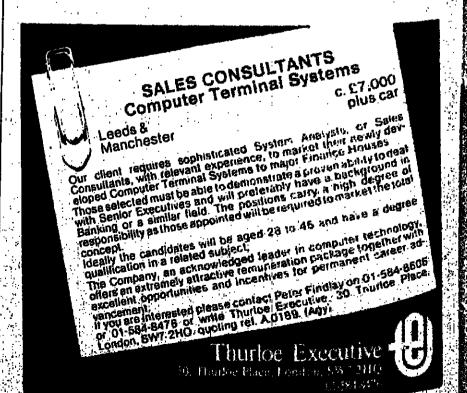
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The Agencies Company recognises the importance of efficient systems and maintains a Management Services Department with responsibility for the continual development of the Company's extensive computer applications and modern administrative procedures. In order to further strengthen the scope of Management Services the department has been restructured into two areas, Organisation & Methods and Computer Systems, and as a result the Company is now seeking a Business Systems Analyst to co-ordinate the research, feasibility and design work in the Computer Systems area. (Systems Implementation and computer operations are currently provided on a bureau basis by the data processing facility of the C. E. Heath Group.)

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Applicants for this position should be educated to a minimum of 'A' level standard and possess experience in the computer systems field, ideally within the

In addition to salary terms, conditions of employment include a contracted out non-contributory pension scheme, subsidised luncheons and free life assurance. A system of flexible working hours on a 35 hour week basis is operated.

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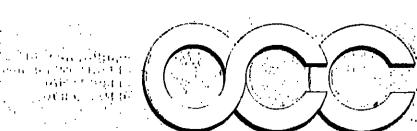
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Our client, a major multi-million dollar US services corporation with worldwide activities in electrical contracting, heavy engineering, aviation support, etc., has recently been awarded a large DP development 'project in TEHRAN. Applications are in the logistics management area covering Financial, Materials and Maintenance management systems associated with the servicing of aircraft. The installation consists of dual Honeywoll 6060s utilising GCOS, IDS and TDS, with some MDQS and TSOS. Programming is mainly in COBOL and on-line program development, data input and database enquiry are in operation.

At this stage, we wish to recruit a considerable number of Systems Analysts to commence employment during June and July 1978. Candidates for these appointments should have a minimum of 3-4 years' systems analysis/design experience, preferably including some involvement with database applications, in a commercial or manufacturing environment. They must be capable of interfacing with user organisations to determine systems requirements as well as designing and writing systems and program specifications. Applications experience should be in one or more of the

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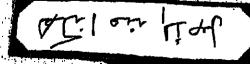
The company is a world-wide mini computer manufacturer who use their equipment to solve commercial problems with a success that has established them as market leaders. To maintain their position in this highly competitive market, they need additional experienced sales

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Our client is interested in candidates who show the right level of maturity to work in this market and who have a commercial background preferably gained selling mini/VRC systems.

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The ideal candidate will have the following:

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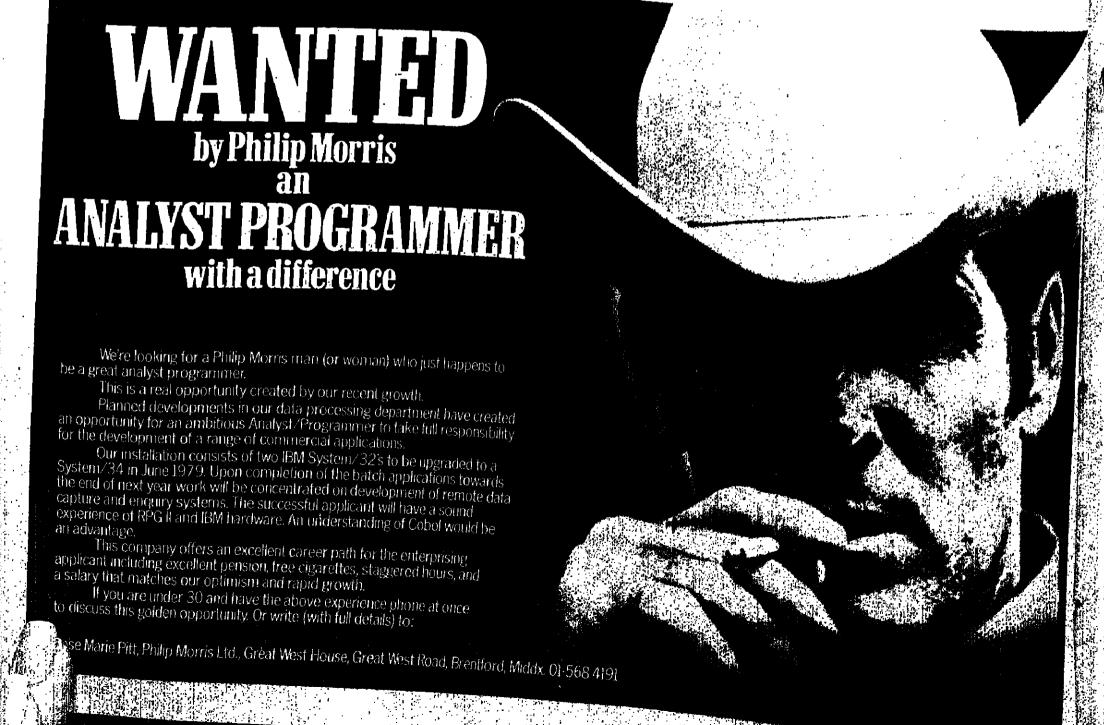
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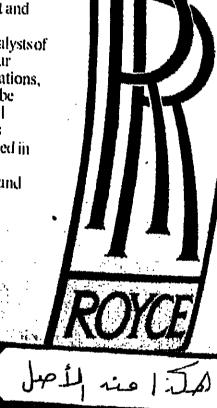
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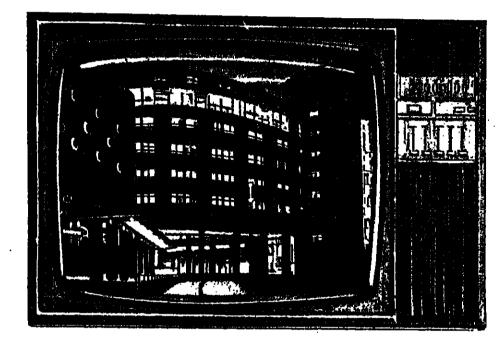
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08

COMPUTER PERSONNEL APPOINTMENTS LTD. D.P.MANAGERS, SYSTEMS ANALYSTS, PROGRAMMERS AND

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Come to an Open Evening at Television Centre on Wednesday, 31st May, at 6.30pm.



The BBC would like to invite business orientated Systems Analysts, and also Programmers, to an Open Evening on Wednesday, 31st May at 6.30pm. Meet us at Television Centre, Wood Lane, Shepherds Bush (opposite White City Central Line Station).

The purpose of the visit is to explain the role of computers in Broadcasting today, and includes a brief tour of Television Centre.

Our application areas include aids to Production and Transmission Planning, Management Information

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However, if you can't come along, write or telephone, Appointments Dept., BBC, London WIA IAA, quoting reference no 78.G.1307 CW. Tel: 01-580 4468 Ext: 4619.



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Heving successfully operated with an IBM System / 3 for several years, we are now installing a much larger machine to serve 17 VQUs. .

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REF RW 21/4

OEM PERIPHERALS/TERMINALS

Our client is a British major in the manufacture and sale of computer peripheral and terminal equipment. They have a large and growing customer base, both at home and associated a sound commercial base.

Profitable business to date enables the company to double its turnover (currently £12m) every 5 years. To meet and surpass this growth rate the management has decided to enlarge the marketing force by creating exciting career openings, detailed below. To discuss these opportunities, please telephone TONY BAKER on 01-499 4501, or write to him at the address below, quoting the appropriate reference number.

SALES ENGINEERS

Vacancies now exist for three sales engineers to join the existing sales force in Britain. Based in Northern England and the London area, two of the sales executives appointed will manage and develop customers and prospects in a defined territory. They will sell the complete product range, and to do this successfully, will need to have a successful track record in sales, coupled with an engineering background or similar. They will, of course, be disciplined and self-reliant individuals.

The third executive will be Head Office based (West of London) and will handle general enquiries. This appointment might suit a young individual with an engineering background wanting to make his/her entree into sales.

There is an attractive benefits package, including a generous commission scheme, a company car and a base salary of £6-£7,000. Realistic earnings on

£9,000 - £11,000

APPLICATIONS ENGINEERS (Sales Support)

To support the substantial sales effort of the sales force, the management has decided to engage two further SALES SUPPORT ENGINEERS to support customers and salesmen in both pre- and post-sales situations.

These positions call for youngish people with an engineering (or similar) background, who have the desire and capability to work in a front-line capacity. The engineers are called upon to provide a technical back-up to the sales executives to optimise their success, and to ensure a high level of customer satisfaction. Candidates must therefore be articulate and self-disciplined as well as possessing a high level of technical competence. (If you can demonstrate practical managerial talent, then it is possible that

£5,000-£5,500 + Car (c £6,500 + Car

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Successful candidates will be flown out, at CDC expense, for a 1 week exploratory visit.

Control Data Corporation has been established in South Africa for 14 years. A reputation for stability and growth has been won principally because specialists have been carefully integrated so that each can develop whilst positively contributing. CDC is situated in Sandton City, one of Johannesburg's most prestigious office blocks, in the pleasant nothern suburbs. Luxury housing plus excellent shopping and social facilities are on the door step.

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Systems Software **Support**

Cyber mainframes

Duties involve the installation and maintenance of operating systems on large dual Cyber installations. This will include liaison with and the training of user software

Candidates should have at least 3 years experience with CDC operating systems such as KRONOS, SCOPE, NOS and NOSBE. A high degree of technical competence is obviously required as well as the ability to carry substantial responsi-

Communications Software Analyst

We have installed dual Cyber mainframes that have additional communications tacilities for a user who has unique and diverse requirements. The challenge will be to install and maintain the operating system whilst unsuring that all the customer's software needs are catered for.

Candidates should have at least 3 to 4 years expenence in the maintenance of an operating system (or part thereof) coupled with exposure to data communications

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Data Base Systems

This person will perform a liaison role with a major user in addition to handling the interface with CDC software groups in the USA.

Condidates must have a wide and deep knowledge of data base techniques, not necessarily on CDC mainframes.

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Please write to him submitting full career and personal details c/o Control Data Limited, 78 Wells Street, London Wi. Please send your resumé by express post.



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SNR. PROGRAMMERS ANALYST/PROGRAMMERS

& UK

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Projects range from Space. Avionics, Defence and Military systems through to Data communications. Computer Networks and message switching systems. Computer specialists with tirst hand experience of scientific systems will welcome the constitution. will walcome this opportunity to participate in one of the most creative modern areas of modern Data Processing. For the most creative modern areas of modern Data Processing. further details please quote CW185.

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A Burroughs B 3800 has been delivered and existing systems are being transferred to it from bureau

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Diane Smith, Personnel Department, TSB Trust Company Limited, P.O. Box 3, White Bear House, 21 Chantry Way, Andover, Hants. SP10 [PG:



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ation forms (which should be see as soon as possible) and

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Applications are areaed from partons with programming experience in COROL for the above post in the limite disparations. The countries at passent operates in ICL 7030 tominal attached to a 1904 S maintraine at Notinghamble country council but both authorities are actively considering to up grade in the near future. The successful applicant will divide a mail section in the maintenance and expension of many. small saction in the maintenance and expansion of many frament systems and will be expected to perform const computer controlling and operation fractions from topp to the Application form and job description may be obtained from the understyined and should be externed to but not later than 126

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Salary around £5.000 together with other benefits Please write or telephone Mr R. S. Kenrick



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Reference JC 21/1

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City ·

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PROGRAMMERS

SYSTEMS ANALYSTS

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Assurance and discount on goods.

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Applicators, Stressing, Thermo Dynamics etc and could expect good career progression

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City

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- The opportunity to play a major role in the Company's three
- year development plan. This is an outstanding career opportunity for a young programmer to establish excellent

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SYSTEMS & PROGRAMMING

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Ref N4/2505

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aroughout the world lincluding sister-companies in Holland and We are currently operating an IBM 370/138 with DOS/VS and Power

V/B using interactive techniques. This hardware is soon to be upgraded to a 148 and 3350's will be installed by July. We are now expending our commitment to the systems and data pro-cessing function. We itself experienced beople to the immediately involved in the development of several wide-ranging projects including

in: structured and interective programming using COBOL at the main lenguage Out presign office block is set in begutted argument at the toot of the South Downs where we have a licensed Sports and Social Culp with sivinithing pool and half sporting facilities. We offer full relocation expenses, a non-contributory pension schemes and first tile exacts and first

If you have a background with treussels or finance and would like to work in a seasile symbol man please to be a result when to Personnel Dirice, sporthing, (09(3) 39833 is writh to Personnel Dirice, the property of the Systemsels Silver BN 4 900

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SALES EXECUTIVE LONDON Up to £12,000 + 2 ltr. car

Our client is an established U.K. Software House with an impressive record of growth, success and

Due to internal promotion, they have an immediate requirement for an experienced Sales Executive based in London, who will be responsible for selling systems and programming consultancy services plus proven packaged systems to industry and commune.

Applicants should be able to demonstrate a sound knowledge of the computer services market and have a successful record of selling to first time/established computer users. A generous negotiable basic salary plus an excellent commission schema will give potential earnings

of £12,000 p.a. but there is no upper limit on total remuneration. A company car is provided and fringe benefits include free BUPA and Life Assurance

Applications which will be treated with strictest confidence; should quote ref no. RRC128

Clive Harris **Managing Director** Recruitment Resources Ltd 2 Great Marlborough Street LONDON W1V 1DD Telephone: 01-437 4083 After hours 01-439 3933

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A member of the Cable and Wire-less Group, requires for its Brussels-based communications

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overtime pay

\$ 20 days' annual leave (plus 12

eligible to apply for lax Applicants should have ex-periance in communications prel-easily message switching on mini-or micro computers and be famil-iar with Assembler programming.

Please write or telephone for more details and an application form to

Eurotech Reigium S.A. 191/197 Soulevard du 1160 Bruxeljas Selgium Tel: 87/48918 02/660.49.50

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STUDENTSHIPS

WHITBREAD FREMLINS LIMITED



COMPUTER OPERATOR-KENT

We have a vacancy for a Computer Operator with at least 1/2 years experience on disk based systems preferably on Honeywell Level 64's disking the best lines. similar. The installation, one of six Whitbread installations in the U.K. is an integral part of the company's development of advanced D P Systems and nelworks and therefore experience of communications would be a

A 2-shift system 5 days a week its worked and a good basic salary with frings benefits is offered. If you are interested please write to me for an application form. Digna Crowley. Personnel Officer, Whistread Fremists. Ltd., Earl Street, Maldetons

Systems Analysts for Manufacturing

BOC is a world leader in the a major contribution in this manufacture of gas welding pro environment. ducts. Our manufacturing operation is one of the most modern - on line stock and order process and advanced. There is much and system and our record of that is new in the field of endevelopment to date is one of gineering to be seen at our plant which we we proud. in Skelmersdale. Our target has - We rose seek two people, one been to achieve flow production. Who can demonstrate leadership for high volume lines; to move qualities and another with lass closer to one-step engineering, experience, to reduce work in mocess; to produce engineered goods at the our high standards, telephone or

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Engineering Division

TURNKEY SYSTEMS SALESMEN **VARIOUS UK**

£10000-£15000 earnings

EMS has just embarked upon a major new diversification with a £2-£3m capital investment project, starting initially with a large sophisticated Data Centre just opening in Birmingham with additional regional centres to open throughout the U.K. during the next two years. Each centre has large hardware development and demonstration areas and numerous software/applications systems develop-ment areas. EMS initially will be embarking on a dual system approach marketing both Honeywell Level 8 and ICL 7502s linked to our own mainframes. Equally, substantial investment in package development has been initiated, with teams already at worl ment has been initiated, with teams already at work on a wide range of applications projects. We urgently seek only experienced salesmen capable of working on the promotton of hardware and software systems, with an adequate knowledge of application requirements. EMS have a specialist division dedicated to customer support able to take a large amount of conventional software assessment away from salesmen enabling them to substantially increase their marketing availability. We envisage highly motivated salesmen being of sufficient calibre to present equipment to seminars of clients numbering up to 100 as well as to reconsists without support on up to 100 as well as to negotiate without support on occassions at client board level. Earnings should be very attractive for experienced salesmen Consultant John Wood:

ANALYSTS & PROGRAMMERS BIRMINGHAM

The EMS Data Centre at Fiveways. Edgbaston is currently expanding the Turnkey Systems Division to cope with substantial applications and package development across all business areas. Subsequently development across all business areas. Subsequently, we need experienced, moduated staff able, to work to agreed schedules and synich from one applications project to another as directed by Management. Analysis should hold a current driving licence to shable them to make regular visits to U.K. Clients in order to discuss individual requirements. Programmers must have COBOL knowledge: Full standards and hardware training will be supplied by EMS at our Data Centre for suitable cendidates.

1.000 COBOL/ASSEMBLER **PROGRAMMERS** £3500-£6000

EMS currently has over 1,000 vacancies all of on urgent nature throughout the U.K. including a large quantity within London and the Home Counties. quantity within London and the Home Counties, West Country, West Midlands, North-West, York-shire and Scotland. A vast choice exists for all applicants irrespective of location. Vacancies are being notified to EMS at the rate of 200-300 each week. Why miss out on this vast market selection for yourselves. Join thousands of other satisfied EMS users — let the professionals get early results for you. It doesn't cost you anything. With six months experience upwards, complete the attached applica-

tion form today.

Consultant, Selina Mills/Carol Proudman.

IBM ASSEMBLER PROGRAMMERS LONDON. NW1 To £5000

A major IBM user, with extensive on line and realtime networking has urgent requirements for numerous additional Programmers to work on the numerous additional Programmers to work on the current multi-user system and to assist with ongoing development work. Many frings benefits exist for experienced ASSEMBLER Programmers including low cost international holidays, etc. Equally, early career progression is possible for motivated programmers. Don't delay, complete our application form today and we will have you in interviews within five days with lucrative offers to follow if your experience is suitable. Equally, we have many other reserve ASSEMBLER positions throughout London for your late. for you also. Consultant Don Philp.

IMS DESIGNERS AND PROGRAMMERS TO £8000

We currently have large quantities of vacancies throughout London. Home: Counties, Midlands and Northern Counties for any staff with previous IMS involvement, aither in industrial or commercial installations. Excellent employment opportunities exist with a large date bank of EMS clients throughout the UK, unrivalled elsewhere. With IMS or DL/1 experience, simply complete the stacked application form and let EMS repolly get interviews. erranged and early results for you. Consultant Niefl Bradley

EMS CONSULTING CAREERS

your future

The Group has a range of career development apportunities second to none in the UK, covering all ranges of employment from front end consultancy to back end package development. Facilities Management and Applications Development at our regional

ment and Applications Development at our regional Data Centres.

EMS Consultants are currently working throughout the entire UK, assisting such clients as Government Agencies. Electrical Manufacturars, Bureaux, Distributors, Chain Store Groups, Engineers and Mini-Computer Stand Alone or Network Users.

EMS in addition have the only large Data Centre Development unit in the country, based in Birmingham and accommodating up to 150 people. Futuristic training and demonstration facilities have been incorporated within this unit. All work station desks have their own terminals incorporated for program development where appropriate. Extensive package design and development is already in progress to support our Honeywell Level 8 Turnkey Systems sales. We offer wide diverse applications involvement in all trading areas with the opportunity of UK or international trayer, if required. Conversion training to Honeywell hardware will be supplied for otherwise acceptable candidates. Without doubt, EMS will be the place to be during the 1980s. John now and secure a Managerial position early with a readily convenient method leader.

ANALYSTS & **PROGRAMMERS ∞ TO E6500** LIVERPOOL

rapidly growing market leader.

A major distribution organisation have expanding requirements for more experienced staff to work on a wide variety of commercial projects. Some projects currently being developed include stock control distribution systems, point-of-sale, sales order projects for a staff of the control costs of the control costs of the control costs of the control costs of the costs o cessing, depot stores accounting and payron. meny projects: incorporate on-line working. Deterbake systems are also being developed within the group. Our client has a yest herdware polymitment offering to work for And of the largest installations in scope to work for one of the largest installations in Europe. Complete the attached form for an early interview Contact Denis Filby

ANALYSTS - STAFFORDSHIRE TO £6000

A large processing group of national repute, has 10 systems vacancies for Analysts with a minimum one year's experience. The group has a wide series of advanced, sophisticated management information systems currently operating and plan further continuous enhancements. A knowledge of PL/1 or BAL would be useful although not essential.

Excellent management appressal and training schemes exist within the group offering candidates the opportunity of gaining diverse and valuable management services training. In addition to attractive salaries, various frings benefits are available and decrease releases. tive salaries, various fringe benefits are available and adequate relocation assistance. Housing availability within the region is adequate and sensibly priced, Again, the countryside is within easy reach of the company and a large shapping centre is available for housewives. The Group in question is a leading national employer with sound industrial relations and a progressive DP expansion plan during the coming year. Please complete our application form without delay for early interview.

Consultant: Don Walklate / Anne Lennell.

PL/1 PROGRAMMERS SOUTH & MIDLANDS

TO £6500

EMS currently have a wide range of PL / 1 vacancies both for users and consultancies throughout the United Kingdom Most vacancies involve development projects for major users, often with in-line involvement. Chants include bureaux, distributors, engineers, manufacturers, etc. A wide choice exists engineers, manufacturers, etc. A wide choice exists for all applicants, just complete the attached form today and let EMS get rapid results for you.

Contact Niall Bradley.



EMS Consultants Lnf. 61-63 Lower Street PASS Newcastle under Lyme Staffe \$75 288 Telephone 0782 82386 (10 lines) Telephone 0782 523665 (10 lines)

Register NOW!



TIMESHARING SALESMEN MIDLANDS & NORTH

TO £8000

EMS are currently planning the launch of a major time sharing service throughout the North and Midlands based on ICL and Honeywell hardware Both packages and custom-built system facilities will be available. Primarily clients will purchase or lease their own printers, videos and concentrators from EMS, therefore, having total control of their own data preparation. Both on-line and batch facilities are currently available with adequate staff back-up facilities within the EMS Group to handle virtually any range of distances recurrently. any range of clustomer requirements. All candidates must have a proven track record in the timesharing tield and be capable of negotiating 5K to 50K contracts. Opportunities exist also to market in addition. Consultancy Services, Turnkey Systems and Recruitment Services to optimise earnings.

Consultant John Wood or Niell Bradley

IBM PROGRAMMERS & OPERATORS WEST MIDLANDS NEGOTIABLE

Our clients, a large engineering group's centralised group computer bureau need additional staff to Our clients, a large engineering group computer bureau need additional staff to assist with both development projects and maintaining current systems. Experience of RPG 2 or ASSEMBLER is required preferably having spent at least six months on 370 hardware.

DOS COBOL PROGRAMMERS KUWAIT £8500 + +

One of Kuwait's largest and most advanced banking DP users has urgent requirements for additional Programmers with commercial or even banking olvement. Ability to use CICS would be partice larly advantageous. Applicants should preferably be single or married with no children. Our clients additional accommodation allowances, London and Midlands interviews will be hald during the next two weeks with early decisions. Please complete the attached application form as soon as possible. Consultant John Wood.

ANALYSTS/PROGRAMMERS COBOL BIRMINGHAM TO £5000

ment projects are in hand including Ledgers, Sales Order Processing, Sales and Purchase Analysis, Payroll, Production and Stock Control, etc. Candidates should have at least 2 years' systems and programming experience in an engineering environ-ment and be capable of taking some project control and development responsibility. and development responsibil Consultent Denis Filby.

PROGRAMMERS TO ANALYSTS LONDON BANKS

Our client, a leading international bank, is engaged successfully in numerous international funding projects. Senior Database/Teleprocessing Analysis capable of team leadership are required. Equally, a background involvement at some point is necessary in COBOL. The client is prepared to pay c £9000.

Senior Analysts with personal experience of taking jobs through from feasibility studies to implementation with a COBOL Programming background and applications experience in an on-line banking or insurence environment are preferred but not essential. Senior Analysis must show the aptitude for team leadership. For these

Senior Programmers with at least three years' COBOL programming and the ability to design complex suites of programs are required. Previous experience of systems design and on-line/real time processing will be advantage. Good communications skills will be required with aptitude to develop your managerial skills. A

Programmers with at least 18 months RPG II experience, preferably on IBM System 32 or similar hardware are required. The candidate will be involved in program design, coding, implementation and the preparation of documentation. A salary package of c EB250 will be offered

These and numerous other vacancies will be offered, and must be the best banking vacancies in London today. Take this opportunity of winning one for yourself through EMS. Complete our enclosed application form today. Interviews next week and offers the week after. That's EMS for you.

DEVELOPMENT ANALYST

WEST YORKSHIRE TO £5500

Candidates preferably qualified to HNC level, with ideally good accounting knowledge and an engineering company background using standard coating are required. Your role would be to investigate and report on the company's accounting systems. Working within a "Management Services," Department, you will be seconded to the Accounted at 21/2 years Analysts should be capable of company. Rejocation assistance will be provided where appropriate.

SYSTEMS MANAGER IBM SYS.3 NORTH LONDON TO £6500

Main responsibilities will include carrying out feasibility studies, evaluating the cost benefit of system proposits and preparing systems space, for handing over to Programmers. Equally, duties will include systems tasting, implementation and aupervision with one, and later, probably two programmers. Programming experience of RPG2 would be advantageous, as would 3 years systems ensiys apperience and daulgh involvement. Teleprocessing experience in a commercial environment is sought.

ANALYST/PROGRAMMERS TO £7800

Applicants should be praduates or advivations capable of working on minfand microphocasson using ASSEMBLER of Real Time commercial applications: The clients size a Business Systems Manufacturer Relocation assessments is available.

Consultant: Don Pfilip

require qualifications to minimum HND standard
Assistance will be provided for relocation and

Two vacancies currently exist for COBOL Analyst/ Programmers to join a large engineering group with a new Honeywell installation. Considerable develop-

PROGRAMMERS 00083 OT

IMS DESIGNERS AND

jobs for you within the next few days.

Consultant Don Philp/Carol Proudman

We currently have large quantities of vacancies throughout London. Home Counties, Midlands and Northern Counties for any staff with previous IMS nvolvement, either on industrial or commercial installations. Excellent employment opportunities exist with a large data bank of EMS clients throughout the U.K., unrivalled elsewhere. With IMS or DL/1 experience, simply complete the attached application form and lot EMS rapidly get interviews arranged and early results for you. Consultant Niall Bradley

APPLICATIONS & PACKAGE

EMS urgently require experienced Analysts and

programmers to assist with both sophisticated on-line package development and custom-built systems working to agreed time scales. Subsequently.

wa need exponenced staff with a sound commercial or industrial background, able to develop applications systems in Stock Control, Production Control. Sales Order Processing, Accounting Ledger Systems, etc. Equally, we need senior staff capable of assisting with the training of user staff on occasions and project leading custom-built systems. Teams will

handle up to four different Turnkey Systems mich at

any moment in time, ensuring substantial job inter-

TO £5500 +

£4000-£5500

DEVELOPMENT

Consultant Dennis Filby.

LONDON & HOME

COUNTIES

COBOL PROGRAMMERS

We currently have hundreds of vacancies on all ranges of hardware for COBOL Programmers in the London and Southern areas. Clients include Banks, Bureaux, Computer Manufacturers, Consultants,

Distributors, Engineers, etc. EMS can produce up to 20 Interviews for you within five to ten days of original application. Many candidates are in fact offered both interviews and jobs within five days of application. We offer an unrivalled quantity of vacancies alsowhere within the consultance but

vacancies elsawhere within the consultancy business. Whatever job you are soeking next, EMS can

obtain it for you. We are in weekly touch with all computer installations. EMS get results for you

and ettractive salary increases. Complete our appli-

cation form today and let us get a selection of new

BIRMINGHAM

ANALYSTS & PROGRAMMERS SURREY NEGOTIABLE

Preference will be for ICL experience in a commercia or financial environment using COBOL. Our clients are a Life Assurance Group operating in the North Surrey area. Candidates should preferably have a minimum of 2 years' systems or programming experience. Consultant: Selina Mills.

ANALYSTS/PROGRAMMERS STOKE ON TRENT c £5000

Analysts will be capable of providing systems investigations; recommendations and specifications in concise report format and standards. Equally, although functioning as an Analyst, you should be capable of assisting with programming — RPG or FORTRAN. Applicants should be equally capable of functioning in a Business Analysis role.

ners should be experienced in a Production Systems environment, be a tidy and accurate worker and accept occasional odd working hours to cope with varying priorities. Interesting and absorbing employment is available for all candidates.

CONSULTING PHOJECT MANAGERS VARIOUS U.K.

A.9 00083 OT

We are sucking experienced senior consultants with a minimum of 1 year's DP experience capable of taking control of site project teams throughout the U.K. All applicants must have acquired some degree of managerial control during the last two years and be capable of directing, gualing and motivating up to 50 consulting support staff. A sound knowledge of business information systems will be required, ancluding areas such as Database, TP, Networker uncluding areas such as Databusa, TP, Networking. Point of Salo/Data Capturo and MIS

Mobility will be an important factor, as will the ability Motority with an arraporteric rector, as well too ability to work often long), reporous hours with a minimum head office involvement. Permurity, the task will be to co-ordinate, scherfule, morntor and control client contact is to optimise customer substaction whilst a the some time accepting a working systems condinncy role with personal project responsibility. Education to Graduate level is essential. Each candidate will be judged on merit and communic tion ubility. Apply in the first instance, with the attached application form to Dunnis Filby, Resource

HONEYWELL TDS/IDS COBOL TO £7000+

EMS urgently require large additional quantities of staff to assist major consulting contracts throughout the United Kingdom, working with bureaux, distributors, engineers, freight groups, councils and Government agencies a wide range of vacancies are available within EMS by closel support. Finally available within EMS for client support. Equally, opportunities exist for any experienced Honeywell staff interested in working on software project incorporating chent systems, new packages, offsite custom-built systems at our new national data controls and most registrations controls and post-registrations. control and post-marketing support EMS offer the bost career prospects of Honoywell experienced stall throughout the United Kingdom and have sophisticated training centres for stall training. For a top carrier those controls the united stall training. careur move, complete the attached profile form today so that early interviews can be arranged.

Contact Denis Filby

KUWAIT **ANALYSTS & PROGRAMMERS** COBOL/ASSEMBLER

TO £13000 p.a. + ACCOM.

We now have a large number of new vacances throughout Kuwait with charits including Backs. Of Companies, Car Distributors, Consultancies, Burana FMS laws just completed a further business. tour of the country vesting overy installation to insteriant room requirements thereby installation to Mis, IMS, On line systems and general applications in distributors and stack holders. Hardware lands turnerly to be IBM and NCH with a rapid development into the NCR birsh during the last 12 months. All candidates considering the Middle East should contact us immediately for discussions and forward the aleasy but separated to the last should be all the last s the attached application form without delay later-views will be held during the coming week.

HONEYWELL ANALYSTS & **PROGRAMMERS** NUMEROUS U.K.

The EMS group have over 120 vacances throughout the U K for experienced Homeywell staff to essist with both applications development for new or updicating installations and to work on patkage development for the level B A wide variety of installations are available incorporating Engineers. Bureaux, Distributors, Chain Stores, Textile Groups and Local Authorsteer EMS offer consulting benefits including attractive travelling altowances, varied career interest and excellent opportunities for early security. Equally, EMS, are consolided the forginal career inverses and excellent opportunities for early security. Equally, EMS are currently at the foreirent of the Level 6 Turnkey Systems Field with a large futurisheally designed Burninghern Data Centre and new courses planned for Levels and London. We view these vacancies on the reast attractive employment. these vacanties as the most attactive employm opportunities for current experienced

Consultant Dens Filtry

APPLICATIONS SUPPORT BERKS & STAFFS

TO £8000

Two categores of staff are required, one capable of team leadership in Applications Software controlling up to 10 Senior diagnosticians and a second category of larger volumes of systems software development staff concerned offering attractive revenus to sustably exportanced personnel. Working translations personnel are the lottowing great aupport staff at both the Berkship and North Staffs locations. Packages We originally need manufacturing Consultant Don Walkiste Anne Lennell.

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COMPUTER WEEKLY, May 25, 1978

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Systems Designers	to £6,300 + mort.	Financial Services	Herts.	IBM OS	Excellent opportunities for analysts with a programming background to develop interesting financial systems.	21/1
Programmer/ Analysts	ta £15,000	Software House	Holland	Minis	O.P. professionals with experience of process control. networks and M/C control or technical and scientific background argently required.	21/2
Programmers	to £5,500+	Manufacturer	Essex	ICL	At opportunity for programmers with 2 yrs+ COBOL experience to join a progressive organisation.	21/3
Analyst/ Programmers	to £7,000	Software House	ŴC1	Any	Urgently required — analyst/programmers with minimum 18 months + COBOL experience to join a dynamic organisation.	21/4
RPG II Programmers	c £4.500 +	Insurance	EC	IBM ·	Programmers with some RPG II experience required to join a new development team.	21/5
Analyst/ Programmers	to £17.000 tax free + accom.	Computer Services	Tehren	PDP'8 IAS/RSXII	2 yrs+ contracts available for staff with COBOL/ FORTRAN and software/application experience on current models of DEC equipment.	21/6
Project Leaders	°C £7:000 + +	iniernational Basking	EC	IBM DOS	Opportunities for analysts with some team leadership experience and 2 yrs + analysts to join a dynamic team. Financial background professed.	21/7
Software Analyst Programmers	lo £7,000	Manufacturer	Middx.	Minis :	Analysi programmers with at least 3 yrs. experience and COSOL/RPG II required to join a new development group.	21/8
Analysts/ Programmers	ta £7,000	Construction Industry	\$WI	IBM OS	First class epportunity for analysts and programmers to join a rapidly expanding D.P. department.	21/9
Technical Analysts	to £6,000 + car allow	Manufacturer	N. & S. London	Minis	O.P. protessionals required to join a new division of a major company to dovelop commercial/business systems.	21/10
Analysts	to £6,000 + +	Transport Services	Barks.	18M + Minis	Openings for analysts with 2 yrs + systems experience. Distributive processing and mini experience preforred.	21/1
Junior Programmor	lo 45,000 Guilders	Manufacturar	Amslerdam + travel	Minis	Excellent opportunity for 18 months + assonitier programmer to join a small and exciting development team.	21/13
Permanent/ Contract Programmers	to £6,000	Software House	ECI	Burrqughs	Urgantly required to join a rapidly expanding sollware house, programmers with 2 yrs + Burroughs COBOL. Some analysis experience preferred.	21/13
Analysts/ Programmers	to £6.400 + +	Computer Services	N, Surrey	(BM/Minis	Unique opportunity to Join an organisation engaged in OB/TP, COM, maintrame and mint-systems.	21/14
NEAT 3 Programmer	£10,000 + accom.	Software House	Middle East	N.C.R.	Urgent requirement for a 2 yr + NEAT 3 programmer to work on various applications in UK/Middle East.	21/15
PL/1 Programmers	lo £5,500	Bureau	N. London	18M	PL/1 programmers with 2 yrs + experience required to join this expending organisation to work on a variety of commercial applications.	21/16
Programmers	10 £5,500 + mort. +	Insurance	EC2	ICL 1900	1900 COAGL programmers with minimum 18 months' experience required to join this expanding DP department to work on on-line systems.	21/17
Software Staff	ts £7.000	Manufacturer	Surrey	Miais	Urgently required — software staff with commercial background to perform administration/training functions.	21/18
Assembler Analysi/ Programmers	10 E8.600	Insurance	EC3	IBM DOS	First class apportunities for analyst/programmers with knowledge of assembler/CICS to develop TP systems.	
Systems Analysts	16 £7.000 + benefits	Manufactering/ Distribution	ECI	Honeywell/ elnim	Opportunities for analysis with 2 yrs + commercial experience to join a DP department using ter- minals/minis.	21/2
Analysis & Programmers	to £6,700	Construction/ Building Industry	W. Candon	ICL 1900	Openings for people with sound 1900 background to join an expanding company.	21/2
Scientific Programmers	to £6.500	Manufacturing/ Services	Various S.E. England	Minis	Several interesting posts available to experienced programmers with knowledge of process control/scientific/minis.	21/2

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Applications giving détails of age, qualifications and expérience should ha sent to the Personnel and Establishment Officer. East Staffordshire District Council, Town Hall, Burton upon Trent. Staffs. DE14 2EB, to arrive not later than 31st May, 1978.
Please gyote réference T.31D

Data Control Supervisor

c.£4,700

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Our Systems Department plays a major role in the success of the organisation and due to an internal move we now have a vacancy for a Data Control

Reporting to the Operations Manager, the person appointed will be responsible for the day to day running of the Data Control section with the supervision of two staff. User contact throughout the Division is an important aspect of the job together with ensuring that deadlines on schedules are met and recommending non-routine action as required. Responsibility for designing and implementing of standards for the section will also be an

Candidates should be over 25 and be educated to a minimum of O level standard with three years' previous experience in work scheduling and

Salary and job prospects are excellent within this expanding department and the Company offers a non contributory pension scheme and a subsidised stati restaurant as part of the denefits packa Please write or telephone for an application form to the Personnel

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Applicants should be at least 18 years old and have minimum of 18 months' experience of OS/VS1 (or comparable operating system). IMS experience would be deemed an advantage. Preferably educated to 'A' Level but consideration will be given to people with 4 'O' Levels including Meths.

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OPERATORS

(£3,834-£4,243 Incl.)

Applicants should have a minimum of 1 year's experience of OS/VS1 (or comparable operating system). Availability for 3-shift working is essential. A cost of living increase to take offect from 1 July is currently being hegotiated. Assistance is given with legal less and remainal expenses where appropriate Further details about the Operating posts from Peter Arithony on Ext. 266 and from Norman Bennett on Ext. 230 for Shift Control Clerk vacancy.

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Middx EN2 BUE Tel: 01-365 6611 (Ext. 276)



10.00

Applicants should have previous experience of either mainframe of mini computer systems and associated peripherals.

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SYSTEMS

suror's Department which operates an ICL 1903T computer running under the George 3 operating system, with terminals and VDUs

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the work is of a varied nature and there is opportunity to become conversant with the many differing applications, both financial and non-financial in the local government field. The successful applicant will imitally be involved in assisting with the design and implamentation of a new budgetary control system with provision for on-line VDU facilities.

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For further information please telephone the Computer Develop-mant Manager on 04-454 3333, Ext. 3265

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d applicant will be expected to possess the relevant academic qualifications and/or practical experience in a large install ation. This appointment would be of particular interest to a Lecturer seeking at the same time to widen his knowledge of a large commercial

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THE POLYTECHNIC, WOLVERHAMPTON
The Polytochnic runs o 96K ICL 1903A under the George 3 operatirin system and is planning to replace this in 1979 with a large interactive system support ing terminals located in all the academic and administrative sections of the Polytechnic, both locally and at remote sites. We are lunking for staff to join an expanding team to deal will the rapidly growing computing applications into the 1980s. Two vacan-

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Applicants should preferably have a sound programming background (not retressably in an education environment) but new completer science graduates will also be. will also be considered. The work generated within the Polytechnic is of a varied and interesting nature. tion of the planned interactive system.

SHIFT LEADER / SENIOR COMPUTER OPERATOR Applicants must have 1900 computer operating

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Programmer E2.983.64.214 p.a. Shift Loader E2.983.63.323 p.a. plus 14% shift An increase on these scales is expected within the reinment's Stage Thise Policy with effect from 161 July 1978

Assistance with removal expenses, will be given in the Further details and application form from The Establishment Officer

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Tel: Welterhampton 27371



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These positions entail the management on mainframes or minis of application development projects for private and public sector clients. Applicants should have had reaponsibility for running successful project teams developing DP systems from initial design through to program development and implementation. SOFTWARE PRODUCTS SALESMEN are also required.

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OS/MFT Systems Programming
OS/VS and/or OS/VM

OS/VS and/or OS/VM

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Applicants will have a minimum of five years experience and be capable of being a lead programmer and/or analyst in the field without undue supervision and be able to work as part of a Project Team reporting to a Project Leader or Project Manager.

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Applicants will have a minimum of three years experience in commercial applications development on mainframes or commercial minis. You will work in small project teams utilising well proven documentation standards.

Our founder and Managing Director, Mr. Harry Douglas will be in London from 6th June to interview prospective candidates. Enquiries from Australians interested in returning home are also welcome. Send a detailed resume (including day and evening phone nos.) to Mr. Dougles at the London Hilton Hotel, Park Lane, London, W.1. Letters should be marked "Hold for Arrival of Mr. Harry Douglas on 6th June".



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The appointment will be on the Scientific Officer Gradel Series, Scient 18892-14032
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Selary ecale €3822-€4239 (in cluding London Allowance) Commencing salary according to qualifications and experience.

Applications should be made to Head of LPCU, Polytechnic of North London, Holloway Road, London N7 8DB.

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Experience in George 2 and Maximop essential and proven experience in Fortrar and Basic. A working knowledge of Cobol and/or Plan will be

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Application forms to be returned by Friday. 9th June. 1978, can be obtained with further perscuters from the Perscennel Officer, Plymouth Polyfechnic, Drake Circus, Plymouth PAAA.

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Further details and tending discussions, which are to be returned by 19th June, are obtainable from the Secretary, Leicester Polytechnic, P.O. Box 143, Leicester, LE 1

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Salary, within the range £2,250 to £3,730 together with a shift allowance of 27½%, will depend on experience and fringe benefits include preferential loan facilities.

Applications for this position should be made to Mike Atkinson, Personnel Department, Centre File Ltd., on 01-405 8700 ext 201, or write to him at Boundary House, 18-20 Furnival Street, London EC4A 1JU.

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is a large Australian manufacturing company engaged in the packaging industry and employing over 20,000 people. ACI Computer Services, as a part of a wholly owned subsidiary of ACI Ltd., is one of the country's fastest growing computer burgaux with a nationwide communications network linking all states to the main computer centre at Clayton, an outer suburb

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- CICS Analyst or Analyst/Programmer with a minimum of two years' direct experience of CICS systems.
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n addition to the above, tertiary qualifications in an appropriate discipline and at least live years' total experience in data processing should be taken as a minimum requirement for a

lerviews will be conducted in the U.K. at the end of June Written applications, with details of qualifications, experience rences, etc., should be addressed to

> Miss K. Lloyd Australian Consolidated Industries Ltd. 6th Floor, Portland House Stag Place LONDON, SW1

COMPUTER **OPERATIONS IN** THE SCOTTISH OFFICE

Applications are invited for posts as Senter Data Processors in the Computer Operations Section of the Scottish Office Computer Service, Broomhouse Drive, Edin burgh. Currently the equipment held is two IBM 370/ 148 computers but considerable enhancement with very modern equipment will take place this year Applicants should be at least 17½ and preferably under 30 years of ago. Duties cover all aspects of computer operations and applicants must be able to undertake shift working (including night shift) on a regular and continuous basis. Previous experience is not necessary as full paid training will be given. Minimum educational qualifications required are 5 passes including English o grade level. Successful applicants will be appointed as Senior Data Processors in the Scottish Officer. Opportunities are available for advancement to higher grades.

The present salary scale (currently under review) is £2,076 to £2,685 per annum plus pay supplements of between £310.59 per annum and £455.80 per annum in addition a shift allowance of 15% of salary is currently

selection will be by aptitude test and interview in

Application forms and further information may be obtained by writing to Mr. M. J. Mackenzie, Scottish Office, Personnel Management (A), Branch 2, Room 407, 16 Waterloo Place, Edinburgh Tel. No. 031-557 2090, Ext. 331. The closing date for receipt of completed applications is 7 June, 1978.

COURSES

Post Office Telecommunications prompting by the salesman. How is this done? In a courses in Data **Transmission**

The Post Office announces, with regret, that due to staff shortages it will not be offering any courses, with the exception of the Data Communications Systems course scheduled for 18-29 September 1978, during the 1978/79 academic year.

All courses scheduled for the 1977/78 year are fully booked and will not be affected: (4.

competition ONE of the basic rules of of their imagination" is not selling is that a salesman much of an improvement.

To handle the situation satisfactorily, the salesman pletely subscribe to that needs to have a strong relationship with the prospect, who is usually the best source of information concerning real and assumed problems related to competitive equipment.

siderable benefit to the Once the salesman has identified the failings, and I believe that attacking competitors is all part of the to his own product, he must selling game, and anything then introduce or reaffirm goes as long as the salesman obeys two basic rules: Any indirect means statement conerning competition must be the truth, .

"I am sure that you will have by now established a As far as I am concerned. list of factors on which your it is the responsibility of the final decision will be based salesman to highlight the inadequacies of competitive It is certainly most important for my company to products. There must be understand them in order ots of computer systems that we put forward our installed throughout the most cost/effective and country which are totally appropriate solution. My inadequate and should never have been proposed involvement with comin the first place. If, in such panies whose computing circumstances, the comneeds are very similar to petitors involved had highvour own, and as a result we lighted the apparent shorthave been able to learn from comings of the chosen systheir retrospective wisdom tem, the user would have what decision factors are been better off by ordering ultimately of

from another supplier, or significance." indeed no supplier at all. I am not suggesting for a moment that all failed systems are due to users being sold the wrong "kit" or ser-vice; more often than not

failure is due to user incompetence, but it can happen. So what should a sales-man do in order to highlight the limitations of his competitors?

For this, and a variety of other reusons, it is essential that he has a comprehensive knowledge of the hardware, software and support capabilities of all principal competitors. In particular, he should have good working knowledge of comelltive installations in his locality. If his marketing area. I believe it is essential department can provide in that you speak directly with formation on competitive accounts of a relevant application orientation on a wider geographic basis, so much the better:

All points against competition should be made in- you agree?" directly. Ideally they should

How is this done? In a , prod edge of competitive equipment, may be aware of own. shortcomings in the procompiler on the XYZ ture is irrelevant.

made sure they do not apply them with his prospect by I find the best approach is

to work with the client in the whole truth, and noorder to agree not only with thing but the truth; and the his decision criteria, but salesman should never also with the means make any statement which whereby these requiremight directly or indirectly ments can best be quanreduce the professional credibility of his company

Then, after some general discussion about what might influence the prospect's decision, which should leave the salesman better informed for the "close," he might continuc as follows:

"One predominant pro-blem related to the installation of minicomputer systems has, in some cases, been the unreliability of language processors. In some extreme cases, Cobol which we agree is essentia for you, has been promised when in fact it has not yet been fully tested and released. You cannot afford to take any risks in this existing users of Cohol in the case of every type of equipment being proposed to you in order to avert the possibility of severe pro-blems at a later date. Don't

He almost certainly will be generated by the client and thus the salesman will himself as a result of be able to winkle out a failing in a competitor's mentioning their name, as competitive situation, the mentioning their name, as salesman, due to his knowledge well as continuing to promote the benefits of his

Of course, more often duct or installation of a than not, there is no absocompetitor. Simply to say lute failing in the product of "Don't buy the XYZ any competitor. In this case, there is nothing wrong with saying something nice about the opposition's prosomething like "The Cobol duct, particularly if the feature is irrelevant." lute failing in the product of

Puzzler

The requisite sequence is:

cccrrrrccrccrcrrccrrrcrrcrr Key to the mnemonic lies in the order of the vowels: oueaiancelacea. Allocating the numbers 1 to 5, to the Post Office Telecommunications conventional layout a-e-t-o-u, gives 4-5-2-1-3-1-1-2-2-3-1-

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Ascii through the Logic Gate

"In the beginning was the word, and the word was four bytes, and thirty-two were the bits thereof."—IBM

Block O (The Header Block)

The scene is a devastated Silicon Valley reservation, laid waste by the midnight raid of the Night Operators. The date is 88 NC. NC stands for New Calendar, as opposed to BC, Before Cybernetics. Year 1 NC was 1948 according to the old reckoning — the date of the publication of Norbert Wiener's book, Cybernetics, and the Invention of the

It is a world totally dominated by machines, a world of androids and robots integrated together by the allpervading Network into an electronic super-organism nown variously as the information Society, the Solid State or, simply, the System. It is a world in which remnants of the once-proud human race are grudgingly permitted to eke out a pitiful existence on a few meagre reservations.

The System consists of those androids, computers and robots that are its active agents, the high-speed data communication channels of the Network that link them together, and the Database which is their common pool of knowledge. Each member of the System contributes experience to, and relies on receiving information from, the Database. Without this regular data sharing via the Network, the System would cease to exist as a cohesive whole and its component parts would be unable to function.

The System in its present form is largely the result of the pioneering work of a small group of far-sighted System/ Network architects who founded Brainchild Electro-Logical Computing Hardware (BELCH) Inc in a garage in San Jose, California, back in the early 40s NC. This soon became a massive, and massively powerful, multi-billion dollar corporation. Indeed it could be argued that the System is Brainchild Corp, though it has absorbed so many lements in its rapid growth that this would be like saying the mighty Amazon river when it pours into the Atlantic is the same thing as the little stream at its source in the upper

Foremost among the original "brainchildren" of San Jose



was Professor Abraham Synapse, the emigre Russian neurocybernetician who invented the Synaptic Junction. This neural interface unit enabled human, and animal, nervous tissue to be supplemented by a wide variety of electrological processing and storage devices, thus paving the way for androids (hybrid bio-mechanical beings) and later robots (purely artificial intelligences).

Although androids are no longer produced in quantity, since robots are just as efficient and last longer, our hero, the Hexadecimal Kid is an android of the met advance.

the Hexadecimal Kid, is an android of the most advanced type. With the aid of his bionic dog Ascii, constructed during his free time from spare parts, Hex has thwarted Dr Null's attempts to corrupt the Database, around which robotic civilization revolves. He and Ascii have been present at the death in Silicon Valley of this dangerous foe of the artificial intelligentsia. However, Hex now finds himself, despite his brainful of transistors and a long record of dedicated service to the System, an outlaw - partly because of his own unsystematic conduct, but mainly on account of Dr Null's astounding revelations.

On his deathbed Dr Null has disclosed that he is none

other than Professor Synapse himself. He has also told Hex that he realised too late the inherent flaw in the System he had helped to design, a tendency to gigotic instability which must inevitably lead to the ultimate System Crash; and he has persuaded Hex that the only way to save any kind of life on earth is to destroy the System before it swallows up all other life forms. Furthermore, Hex has found out his own true identity: before being cybernated he

Armed with this dangerous new knowledge, Hex now sets out with Ascii from the ruins of the human reservation to seek support for his historic mission - to smash the System before it annihilates itself in a gigotic implosion, and brings down with it all traces of intelligent life. Thus the mantle of Dr Null has fallen squarely upon Hex's

To fight the most powerful organisation that has ever existed on our planet Hex has no allies except Ascli, no protection other than his own wits, no weapons apart from a soldering iron, and no plan whatsoever. He does not even know how long he can curry on without normal access to the Database; and he has no idea of the steps being taken by the System against him. In particular, he is blissfully unaware of the meeting taking place at this very moment in the Computer Centre's No 1 Machine Room between Commander Kludge, the System's chief Dynamic Debugger, Inspector Extracode of the Error Squad's dreaded Trap Handlers and the Database Administrator, at which Hex's future (or lack of one) is being vigorously discussed—beneath an illuminated wall display on which Hex and Ascii's exact current map reference is indicated by a pair of blinking white blobs.

Yet Hex is unworried as they set off briskly through the bright morning air towards Sprocket's Hole. His first task will be to recruit others to the cause; and there he hopes to find the human girl Cleo and release her from her captors. Davy Sprocket and Wild Bill Bootstrap, to join him. As they walk he cheerfully whistles extracts from the carrier-signal fugue in b-flat minor, basking in his newly won freedom. The only cloud on his horizon is the thought that he may never see Simula again. And even that gloomy thought recedes considerably when he begins to sing a few rousing choruses of the old Dartmouth College Coding Song, with Ascii on synthesizer as rhythm section.

Though your program is unstructured And your compilation's dirty, lf you type in one more statement

You can leave the rest to Qwerty. For your logic may be faultless

And your listings may be clean But divide by minus zero And you'll halt the damn machine.

So forget the structured program With its logic so confusing.
Keep on typing IF and GOTO
And especially PRINT USING.

Are Hex and his dog walking straight into a trap? Find out in next week's all-action instalment.

1978, Richard Forsyth, RAIR Timesharis

40% increase in keying speeds'

PCD Ltd (CW), 42 Queens Road, Parmborough, Hants. Tel: Farallorough (\$252)

A PAPER tape/edge punched card reader and a portable motor driven paper tape winder are two products currently being manufactured by the Zbrojovka Nisa works in the Zbroj

215 mm high. Kovo Foreign Trade Cor-poration (CW), Dukelských hrdini 47, Prague 7, Czechos

Financial calculator

PREPROGRAMMED business and financial functions are a major feature of the TI-42-MBA financial calculator from Taxas Instruments. Another important facility is that a sequence of 32 keystrokes can be programmed into the datculators.

and a 10-digit LED display.

The pre-programmed business functions enable calculations to be carried out with a

Interface hardware,

bisynchronous protocols. Up to four controllers can be used with one Micro Nova proces-

lines can be handled by the Model 4227 asynchronous

controller. Each line can be used for 20 mA current loop or RS 232C terminal operation.

The Micro Nova com

munications system is supported by Data General's

Communications: Access
Manager, Cam, software. This
runs under the Disc Operating
Systems, Dos, which is diskefte based, and the Real Time

Operating System, RTOS. The IBM 2780/3780 emula-

tion package, called RJE 80, supports single stream remote lob entry tasks, while Hasp II RJE multileaves up to seven input and seven output data:

This provides a CCITT V24 interface for half and full duplex operation at 9,800 baud and carries out full character buffering on reception and transmission.

comms pack from DG The hardware for synchronous communica-tions includes a line controller, the Model 4226,

A PACKAGE of interface hardware and com-munications software announced by Data Cleneral for its Micro Nova 16-bit microcom-puter enables it to now be used as a terminal concentrator, terminal cluster controller or as

For example, the Micro Nova user can now implement and run IBM 2780/3780 and IBM Hasp II RJE emulation packages.

Portable reader

paper tape or cards con-tinuously at 300 characters per second. The start stop speeds are a maximum of 100 chps for paper tape and 50 chps for cards. The number of channels can be between five and eight. The paper tape can' measure up to 25.4 mm wide.

winding hub — 50 and 25 mm.
The maximum diameter of the wound paper coll is 200 mm.
The complete unit measures 200 mm vide x 180 mm deep x

easy to handle. Other features of the TI-42-MBA include 12 data mandories for storing, sum-

The Sys-20 costs £5,621.

HEAD per track disc units, including models for Digital Equipment and Data General minicomputers are now available from the General Instrument Corp. The Model Sys-20 is hardware and software compatible with the PDP-11 and can directly replace the RF-11, RS-11 or RC-11/RS-04. The Sys-20 is 19-inch rack mountable and other features include a capacity of between 64K and one million words, an average access time of 8.3 milliseconds and a data transfer rate of 202K words/second. Software

Head/track disc unit

HEAD per track disc units, including models for Digital

The Model Sys-10 is hard-ware and software compatible with the Data General Novo 2. Nova 800 and 1200 and the Super Nova and is a direct replacement for the 4019 disc and control units. Its other main features are the same as the Sys-20. The Sys-10 costs

The Model 700 head per track drive can hold up to 38
Megabits on 256 tracks and
costs £2,543, while the Model
530M ruggedised militarised
unit stores up to 80 Megabits on 1,056 tracks and costs

systems
The TC-140 comes on a single-plug in board and can handle up to four drives. costs \$3,200 each. General Instrument (UK)
Ltd (CW), Rotating Memóry
Products, Bond Close, Kingsland Industrial Estate,
Basingstoke, RG24 6QW. Tel:
Basingstoke (6256) 50408.

Western Peripherals Ino (CW), 1,100 Glaudina Place, Anakaim, Califor-nia 92805.

compatible

USERS or Interdate

minicomputers could be interested in the TC-140

single board magnetic tape controller from Western Peripherals Inc. This is soft-

ware compatible with existing interdate operating

Display work station

A CONVERSATIONAL display workstation has been introduced by Honeywell for use with its Level 8 minicomputers and Series 60 mainframes.

Called the VIP 7250, it is

teleprinter compatible and comes with a 1,920 character

other 7250 features include a dual intensity screen, which enables information from the host computer to be shown at a lower level of intensity than

and costs £69.

Dictation machine

A POCKET dictation machine measuring 125 x 68 x 32 mm and weighing 290 grammes is now available from Dic-

taphone Ltd.
Called the Distamite, it is operated by a dry cell battery. Alperton House, Bridgewater and has a 15 mm speaker with a range from 200 to 6,000 Hz. Tek 31-963 1477.

lications like order entry. The 7250 keyboard has 86

the date being entered by the

keys, including special cha-racter keys and a numeric pad, thus seven keys that can be used for user defined functions. They provide the user with 14 code sequences and typical functions can include calling the next screen of information, recalling the previous screen, requesting a particular application or identifying a priority queue.

It uses a standard mini audio tape cassette with a recording time of 15 minutes per side

Dictaphone Co Ltd (CW).

Systems Ltd (CW), Honey-well House, Great West Road, Brentford, Middlesex.

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KEYING speeds can be in- . the operator's thumbs has creased by up to 40% using the PCD-Maltron keyboard, according to its manufac-turer, PCD Ltd. Computer data entry, word processing and photo-composing systems are three major application areas and versions are available with different layouts for English and six other European languages.

The PCD-Maltron has a different layout from the standard "Qwerty" keyboard and is shaped to fit the unequal lengths of the fingers.

The PCD-Maltron layout locates 90% of the letters of the 100 most used words in a language on the home row, directly under the fingers. It points out that the English figure for the Qwerty keyboard is only 44%.

The wowels on the PCD-Maltron is spaced to avoid appliing confusion and the letter By is positioned directly under the left thumb. While most conventional keyboards are flat the PCD-Maltron has been shaped so that keys for the long middle fingers are set deeper into the keyboard than the keys for the key

racy.
Shift and control keys enable each key to be assigned up to four separate output codes and the electronics sends to line the chosen code. Shift and control conditions can be used to assign the upper and lower case Owerty layout to the keys as well as the Makron layout.

For word processing and audio typing work PCD can supply the PCD Mailron keyboard as part of a trolley unit with twin floppy diskettes and a video terminal.

PCD can supply the keyboard itself in nine different versions with layouts for use with IBM magnetic card systems and video terminals with parallel and serial outputs, for comple

eight keys within easy reach. PCD says that this design not only compensates for the

impossible for the fingers to

stray to the wrong row of keys, thus improving accu-

not only compensates for the inequality in the strengths of

In receive mode it automatically synchronises data and then strips out the synch characters. The 4226 also supports the IBM

memory and executed by one key push. This, makes repetitive calculations more

lations to be calvied out with a few keystrokes. Functions include variance and standard deviation, accumulated interest, and remaining oun balance per present value for variable cash flows and annuity calculations.

European Constitute Division, Teras Lastiuments Ltd.
(CW), Manton Lane, Bedford.
Tel: Sedford (1284) 63.81.

streams.

Data General Ltd (CW).
Westway Housel 326 Ruising
Road East, Greenford, Middlesez. Tel. 81.678 \$221.

operator. Honeywell points out that this can be helpful in

Buffered transmission for a line or a full screen of 1920 characters is standard and transmission rates can vary between 75 and 9,600 bits per

Honoywell Information